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The Next Generation
of Image-Guided Surgery:

The Alcon ORA System with VerifEYE Lynk

Five leading cataract-refractive surgeons
share how image guidance and intraoperative
aberrometry help improve their surgical outcomes.

MODERATOR: Robert J. Cionni, MD

PARTICIPANTS: Kevin J. Everett, MD - Bret L. Fisher, MD
Christopher S. Sales, MD, MPH - Robin R. Vann, MD

The Next Generation of Image-Guided Surgery: The Alcon ORA System with VerifEYE Lynk

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MODERATOR



ROBERT J. CIONNI, MD

- Medical Director, The Eye Institute of Utah, Salt Lake City, Utah
- rcionni@theeyeinstitute.com
- Financial disclosures: Consultant (Alcon)

PARTICIPANTS



KEVIN J. EVERETT, MD

- Medical Director, Henry Ford Health System Optimeyes, Lakeside, Henry Ford Medical Group, Sterling Heights, Michigan
- keveret@hfhs.org
- Financial disclosures: Consultant (Alcon)



BRET L. FISHER, MD

- Medical Director and Founding Partner, Eye Center of North Florida, Panama City, Florida
- bfisher@eyecarenow.com
- Financial disclosures: Consultant (Alcon)



CHRISTOPHER S. SALES, MD, MPH

- Assistant Professor, Weill Cornell Medical College, Department of Ophthalmology, New York, New York
- css9014@med.cornell.edu
- Financial disclosures: Consultant (Alcon, Coronet)



ROBIN R. VANN, MD

- OR Medical Director, Assistant Professor of Ophthalmology, Duke University Eye Center, Durham, North Carolina
- robin.vann@duke.edu
- Financial disclosures: Consultant (Alcon)

Dr. Cionni: Thank you everyone for joining this discussion of intraoperative aberrometry. At the Eye Institute of Utah, my colleagues and I began using intraoperative aberrometry when it was in its infancy, and we've experienced much of its development. Intraoperative aberrometry has undergone significant improvements to reach the level it occupies today, including integration with the VERION Image Guided System (Alcon) and other surgical equipment.

Dr. Cionni: We're going to discuss the current state of intraoperative aberrometry and its benefits and value for the clinic, the surgeon, and the patient. Additionally, we'll tackle how image-guided aberrometry can be incorporated into the practice. How did all of you begin using intraoperative aberrometry?

Dr. Fisher: We acquired the first-generation ORA System from Wavetech in 2013 and then purchased the ORA with VERION technology (Alcon) soon after it was released. In 6 years, we've used intraoperative aberrometry as well as image guidance systems, and we've been very excited about the improvements in surgery we've seen with those systems.

Dr. Vann: Our department at Duke University acquired the ORA in 2016. We have three facilities with three operating platforms, and the ORA is incorporated into each location. We've been continuing to learn, grow, and benefit from its use.

Dr. Everett: We have had ORA aberrometry since it was WaveTech in 2013, and we brought the VERION on board in 2014. This year, we incorporated ORA System VerifEYE Lynk (Alcon) into our group. It's been a wonderful learning experience. I can't imagine being in surgery without any of these tools. We have a program where we're able to teach residents laser-assisted surgery, aberrometry, and VERION. It's been fantastic (Figure 1).

Dr. Sales: We acquired the ORA System with VerifEYE Lynk about a year ago, and we've really been benefitting from the pioneering work done by some folks on this roundtable. Like you, Dr. Everett, I've enjoyed teaching it to our fellows and our residents as well.

Dr. Cionni: How do you see the value in adopting aberrometry?

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Dr. Sales: For me, the value of aberrometry is two-fold. First and foremost, I think it helps you make your patients happy by meeting their expectations. Second, it helps you distinguish yourself as a cataract surgeon who can deliver excellent refractive outcomes. For a junior surgeon like me, both factors are critical to building a reputation in the community, especially in a tight market like New York City.

I've only been in practice for 4 years, and one lesson I've learned the hard way is that whether patients say it or not, they all expect to see better without glasses after cataract surgery. And their expectations are even higher if they pay for an advanced-technology IOL. Intraoperative aberrometry and image-guided aberrometry make me a more accurate surgeon, which makes me more confident about implanting advanced-technology IOLs and recommending them to patients.

Dr. Cionni: That's absolutely true. When I started in ophthalmology, we didn't even talk about refractive goals. We just put in the implant that we thought was best for the patient. Perhaps about 20 years ago, I first had a patient say, "I can see to drive now, but I really used to enjoy not needing my glasses for up close. I would rather have stayed nearsighted." That was a revelation—the beginning of understanding the importance of patient expectations.

As you said, those expectations are now through the roof! Regardless of whether patients want an advanced-technology IOL, they all expect to depend less on glasses. Preoperatively, I spend a great deal of time with the patients, discussing what they want with their vision after surgery and deciding which lens is best suited to meet their expectations. I do the exam and finish the plan right in the room. Once we're done, the plan is transferred



Figure 1. Kevin J Everett, MD, utilizes the ORA System VeriEYE Lynk during cataract surgery.

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to the operating room, where we can use it without fear of data entry errors.

With the VeriEYE Lynk and the VERION Vision Planner (Alcon), I can actually show patients the picture of their eye, where their astigmatism is, and how we match up the vessels to make sure we accurately align their new lens. I build confidence in both patients and myself that we know what we're doing

and that it's the right choice. Before this technology, we didn't have that important opportunity for confidence building. Without intraoperative aberrometry and image guidance, my enhancement rate was close to 15%. With these two technologies, which are now linked, my rate is less than 4%. That's not me getting better—that's the technology getting better.



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Dr. Cionni: Let's talk data. As I mentioned, my enhancement rates have declined significantly. In the broader picture, what data have you seen in the literature to support the use of intraoperative aberrometry to improve patient outcomes?

Dr. Everett: I look at several landmark studies. First is Dr. Warren Hill's meta-analysis of the outcomes of surgery on over 260,000 eyes where optical biometry was used.¹ Dr. Hill looked at how many patients achieved a spherical equivalent within 0.5 D of their goal, and he found that less than 1% of surgeons met that goal for 90% of patients or more. The vast majority of surgeons achieved this in only 59% to 78% of cases. Dr. Hill thought that the most successful 1% of surgeons may be putting more time into their formulas and workups, and most surgeons may be overestimating their surgical outcomes.

When Dr. Hill looked at cases that incorporated ORA intraoperative aberrometry, he found that 90% of surgeons got 90% of patients within 0.5 D. That's a dramatic difference that I always consider.

I also look at Dr. Lanchulev's paper about using ORA for postrefractive cataract surgery, where he found that using intraoperative aberrometry produced much superior outcomes compared to some of the formulas that we were using.² We all remember those days where we spent an extra 10 to 15 minutes working up each postrefractive patient, trying to figure out which implant would be best, and going online to run all the formulas. It's just a wonderful thing to not have to worry about that when it comes to postrefractive patients with ORA.

Dr. Cionni, in your recent article in the *Journal of Refractive Surgery*, you did a retrospective review of 32,000 cases to determine how intraoperative aberrometry performed

When the lens suggested by aberrometry was different than the calculation, although the intraoperative aberrometry percentage didn't change, it was still right about 82% of the time. The preoperative calculation would have produced an inferior result. When the intraoperative aberrometry changed the lens choice, using the lens determined through preoperative calculation would bring the patients within 0.5 D down to about 69%.

- Dr. Cionni

versus preoperative calculations.³ It was very clear that this approach was vastly superior to a preoperative calculation, especially if the lens was changed by the ORA. I thought it was important and consistent with what I've found in the past, and this makes an even stronger case for aberrometry.

Finally, we're all doing a lot of torics these days, and we want aberrometry with VerifEYE Lynk to make a difference for those procedures. Dr. Michael Woodcock and colleagues, including Dr. Cionni, did a multi-site, 260-eye study that showed about 89% of patients had residual cylinder of 0.5% or less with ORA.⁴ Those results are very consistent with my review of 125 eyes using the ORA with VERION, in which about 91% of patients had less than 0.5 D and 97% had less than 0.75 D (personal data). These are all

very powerful studies that show the advantages of having intraoperative aberrometry in our armamentarium when we're trying to satisfy very demanding patients on a daily basis.

Dr. Cionni: In the paper you mentioned where my colleagues and I reviewed over 32,000 eyes, the data were gathered by the AnalyzOR database.³ That database is incorporated into the ORA System with VerifEYE Lynk, which collects postoperative results and lets all of us track our results.

In those tens of thousands of eyes whose data are included in the database—where intraoperative aberrometry was used by hundreds of surgeons across the country—81% were within 0.5 D of the target. With the preoperative calculations alone, that number would have been about 76%.

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When the lens suggested by aberrometry was different than the calculation, although the intraoperative aberrometry percentage didn't change, it was still right about 82% of the time. However, the preoperative calculation would have produced an inferior result. When the intraoperative aberrometry changed the lens choice, using the lens determined through preoperative calculation would bring the patients within 0.5 D down to about 69%.

These are powerful numbers, and they highlight not only the fact that we're getting better results with intraoperative aberrometry, but also the opportunity we have to better track our outcomes and extract key information from this database. I first realized the benefits of intraoperative aberrometry for my own outcomes right after it was incorporated into VerifEYE. I looked at my first 200-plus patients and saw over 90% were within 0.5 D. I'd never, ever achieved that in my practice before. When VerifEYE Plus was released, I waited because I really wanted the rotational tracking that was promised in the next generation. Once we had that with VLink, I incorporated it into our OR and clinic. Now, not only do we have greater accuracy in the aphakic and pseudophakic measurements, as well as wonderful results, but we also have improved efficiency in planning stages in the clinic.

Dr. Cionni: Let's talk about timing. What's the right time for a practice or a surgeon to adopt intraoperative aberrometry?

Dr. Vann: Everybody focuses on machines and technology, but I think the right time for a practice or a surgeon to adopt aberrometry is when there is a mindset change. The practice has to be ready to begin with a commitment to follow and refine outcomes. Any practice where surgeons want to improve and



Figure 2. The Verion intraoperative planning screen allows you to determine the microscope relation to the patient for real time tracking and overlay incision orientations and capsulorhexis guides. The IOL centration and orientation can be adjusted according to the preoperative limbus, preoperative pupil or visual axis.

tackle the cases where preoperative planning continues to puzzle them will appreciate this technology (Figure 2). Torics, for instance, still give us some surprises. Hyperopic eyes are still very challenging, even with the best formulas. And we already know, based on the literature, that intraoperative aberrometry provides a huge benefit for postrefractive surgery eyes. We can significantly reduce enhancement rates by switching to aberrometry, which gives us an important reason to consider the technology. Surgeons who adopt aberrometry get the confidence they need in their outcomes and abilities to feel comfortable offering more patients advanced technology IOLs.

Intraoperative aberrometry is also a way for us to involve the OR team and the clinic team in striving to improve patient outcomes. They see that fulfilling expectations, providing an excellent experience, doing accurate preoperative measurements, and offering a range of options are all part of the same effort to help our patients. Staff members learn the value of aberrometry and how it can improve a patient's surgical outcome. It helps us validate the support for

good refractions in the clinic because we measure outcomes based on that 1-month postoperative refraction, no matter what kind of tracking we do.

All over the country, we have to deal with dramatic changes in healthcare. In North Carolina, we're relatively insulated from a lot of healthcare plan changes, but now we're dealing with value-based care and at-risk plans. We will be assessed by the quality of our outcomes and patient satisfaction. To succeed, we need to track and achieve better outcomes. Given the success of intraoperative aberrometry, practices might consider using it to improve outcomes and lower their numbers of enhancements and dissatisfied patients. It also will give surgeons greater confidence to offer patients advanced technology IOLs.

Dr. Cionni: That's powerful. In our area, we have a very strong, hospital-based insurance, which insists that surgery is done at their surgery centers. People with that insurance plan have to pay out of pocket to have surgery performed at our surgery center, which is out of network. But every single day,



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I conducted a study with a resident where we looked at surgically induced astigmatism to see if it is influenced by the corneal diameter. It only took 40 cases to see that the range of surgically induced astigmatism went from 0 to 1 D in those cases. I was using VERION to align the incisions, so I knew I was at 180 in every case, but I was still inducing variable amounts of astigmatism. That told me I needed to seek something else, so I adopted both the Verion and ORA systems.

- Dr. Vann

patients choose to have surgery in our surgery center solely because we have intraoperative aberrometry. I talk to them about the importance of hitting the target the first time, and that's really all it takes.

Dr. Cionni: What are some reasons that surgeons consider image-guided aberrometry?

Dr. Fisher: As refractive surgeons, we've known about the importance of image guidance for quite a while now. About 10 years ago, we began using image guidance technology for pupil tracking and alignment in LASIK cases, accounting for cyclotorsion and eye movement. It was instrumental in increasing our accuracy and improving outcomes. LASIK outcomes today are phenomenally high, and patients are exceedingly happy. We've been striving to reach similar goals for cataract surgery by applying some refractive technologies, and image guidance is a great example.

There are many benefits to image guidance, best evidenced in the link between the clinic and the surgery center. We capture images, use them for

surgical planning, and transfer the data seamlessly to the surgery center in a very efficient process that helps prevent data entry errors. Instead of capturing data on different devices and manually transcribing it into calculators and the EHR, we capture an image and the image accompanies the data and the patient to the surgery center, where we use it to guide surgery. In the operating room, the VERION's integration with the LenSx (Alcon) microscope helps guide centration of multifocal lenses, which is crucial, as well as incision placement. It can provide a template for the laser capsulorhexis if desired.

When VerifEYE Lynk marries the benefits of the VERION with aberrometry, we get the strengths of both systems together. Aberrometry identifies the posterior corneal contribution to astigmatism and tells us the proper lens alignment, which we can then mark digitally with VERION. No more ink, which is another source of error. In addition, the VERION formula preoperatively incorporates the Barrett True-K formula for postrefractive eyes. That gives us a ballpark figure for the right lens for our patients, and then we

can refine that number with ORA in the OR to make sure our selection is highly accurate. We're combining the strengths of two very powerful pieces of technology in a way that's seamless and very efficient.

Dr. Cionni: It is possible for all the keratometry measurements to line up, but have the refraction be off as a result of significant head tilt. Trying to manually determine the horizontal axis in the OR is simply impossible. By incorporating VLink—which captures a reference image, marries it to the measured astigmatism, and then transfers it to the OR—we always get the accurate axis.

In our own surgery center, we've had several cases where intraoperative aberrometry and VLink have picked up what would have been a wrong implant choice based on the calculations being in the wrong patient's chart. That simply can't happen when all the data is captured digitally and transferred to the operating room. We want the best outcomes with no errors, which can affect our patients' outcomes or their faith in us. Instead, we see patients appreciating the level of

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technology we offer and experiencing excellent results. They're very happy to give us 5-star reviews, which not only boost referrals, but also may influence how we get paid down the road.

Dr. Cionni: What were your journeys like, adopting and implementing the ORA System with VerifEye Llynk?

Dr. Fisher: As a longtime user of both the ORA and VERION, I was very comfortable with the strengths and subtleties of intraoperative aberrometry, and I knew the value of the VERION system's independent features, so the transition to VLink was pretty easy. It gave us a seamless way to marry their functions. It was a natural evolution of two technologies that were already bringing great value to my practice and to my patients.

Dr. Everett: I was using both for a long time as well, and VERION just made so much sense to me because of my years of LASIK experience. We've had registration for 15 years or more with LASIK, and now we have it in the cataract suite. When I heard VLink was coming out, I couldn't have been more excited. It's been a seamless introduction to our OR. After 8 months now, I can clearly see that it's faster than our old process, and I'm even more confident in the readings. I can't say enough about it. It's been a great addition to our armamentarium in the cataract and refractive world.

Dr. Cionni: It's exciting to marry these two wonderful technologies. Each provided its own efficiencies, but the ability to link them certainly has made a difference in our practice.

Dr. Sales: I didn't use the technologies separately, so I take it for granted that the VLink marries two devices. If I didn't know the history, which everyone here has articulated so well, I would have just assumed that they were always

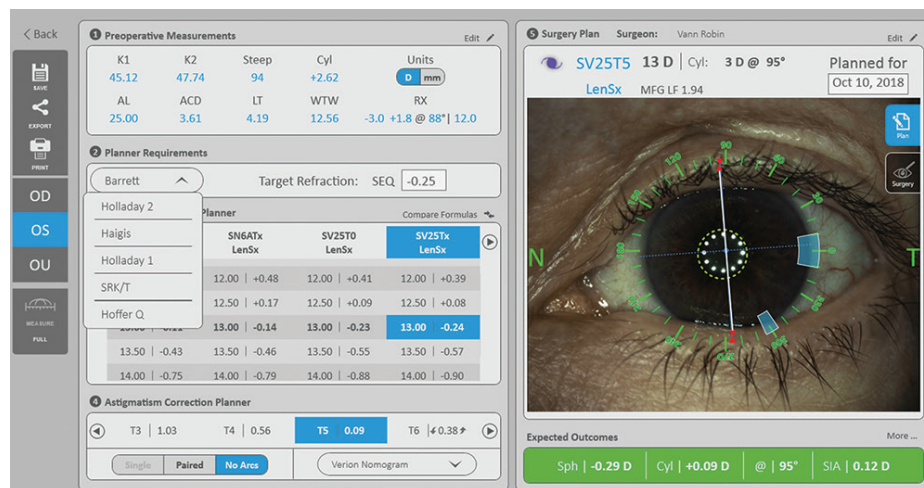


Figure 3. The VERION Vision Planner allows you to perform IOL calculations using a variety of formulas including the Barrett True K and Barrett Toric Calculator with a view of the reference image and predicted refractive outcome.

amalgamated into one unit because it makes so much sense. It speaks to the efforts of pioneers in this field that the user experience feels seamless.

Dr. Vann: My perspective is a bit different as well, because I wasn't an early adopter of intraoperative aberrometry. I started with VERION to improve planning and alignment for torics and help me make surgical incisions that would more carefully control surgically induced astigmatism. But when we started learning more about posterior corneal astigmatism and found that surgically induced astigmatism wasn't nearly as predictable as we'd all thought, I looked to aberrometry to complete the puzzle. With aberrometry, I had the missing element to account for posterior corneal astigmatism, as well as to evaluate surgically induced astigmatism so that I can customize treatments on the table. We can't nail surgically induced astigmatism precisely before surgery.

I conducted a study with a resident where we looked at surgically induced astigmatism to see if it is influenced by the corneal diameter. It only took 40 cases to see that the range of surgically induced astigmatism went from 0 to 1 D in those cases. I was

using VERION to align the incisions, so I knew I was at 180 in every case, but I was still inducing variable amounts of astigmatism. That told me I needed to seek something else, so I adopted both the Verion and ORA systems.

When VLink came about, it synthesized the two devices and took away the transcription issues that concerned me. It's making me more efficient and confident in the operating room because with integration of the two technologies, I can drive the Centurion Vision System (Alcon), acting on things much more quickly with the cataract suite.

Dr. Cionni: Do you feel that the adoption of these technologies has increased your confidence that you're going to hit the refractive target? Does it make you offer this to more of your patients or drive more patients to receiving multifocal or toric IOLs in your practice?

Dr. Vann: Without question. Within the first 6 months of using aberrometry, I was much more confident about offering advanced technology IOLs, particularly toric lens implants, because it took away some of the surprise



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The more data that gets into the system, the more powerful it becomes. Initially, we just looked at spherical equivalent outcomes in all eyes. Now we can separate it into hyperopic eyes, short eyes, long eyes, postmyopic LASIK eyes, posthyperopic LASIK eyes, postRK eyes, RK with four incisions, RK with eight incisions, RK with more than eight incisions—you name it.

– Dr. Cionni

elements that I could not predict. I felt much more confident, particularly in low-cylinder cases, where surgically induced astigmatism and the posterior cornea have a greater impact in the overall astigmatism, making alignment very important to reducing residual astigmatism.

Dr. Cionni: I agree wholeheartedly. All the best formulas that account for the adjusted axial length and posterior corneal astigmatism—the Barrett, Koch, Wang, etc.—are still based on averages (Figure 3). In practice, one patient may not have any posterior corneal astigmatism, and another may have a lot. Unless we can actually measure the total power of the entire system with aberrometry, it's very hard to predict a good outcome.

Dr. Cionni: If you used the ORA System with VerifEYE Plus, do you see additional advantages of the ORA System with VerifEye VLink?

Dr. Vann: The ORA with VerifEye Lynk is integrated with VERION Vision Planning system, so we're looking at the data in the same context as other surgical data, and the plan can be exported to the laser. There are no transcription errors. We get precise

alignment without cyclotorsion errors, accurate pupil centration for multifocal lens alignment, and a ruler to confirm the final axis alignment of a toric IOL (Figure 4). One feature of the VLink system that I really appreciate is the ability, when integrated with the Centurion system, for the surgeon to drive the aberrometry capture, obtaining it at the optimal time for the pseudophakic and aphakic measurement phase.

The outcome tracking is very welcome, as well. There's no burden of data entry because data are automatically exported to the VERION system and the AnalyzOR for IOL personalization in the preoperative personalized constants for our formulas, such as Barrett and Holladay. Everything is available on VERION.

Dr. Cionni: Prior to VerifEYE Lynk, when I had a patient whose astigmatism was too low for a toric T-3, I favored doing manual incisions guided by aberrometry rather than femtosecond laser incisions because I was more certain that I'd be on the right axis. With incorporation of VerifEYE Lynk, I'm now so confident that the arcuate incisions made by the laser will be safely on the right axis that it has become my choice for low astigmatism.

Dr. Cionni: How do you increase the adoption of ORA with other surgeons within your own practice?

Dr. Sales: In our group, we've had to win hearts and minds. The minds have been easier, because data-driven surgeons are amenable to all of the evidence we've been discussing here. But surgeons' hearts, I've learned, are very sensitive to any hiccups in the OR. If our OR staff can't get a machine to work properly, for example, it can present a significant impediment to surgeons' adoption of ORA.

We've tried installing multiple new technologies simultaneously in all three ORs in our multi-specialty ambulatory surgery center, which has 20 or so nurses and 10 PAs, and it's been challenging for everyone involved. The experience with each piece of new technology has been too diffuse for any given individual team member to master it quickly.

This is why I think it's important to have an ORA champion in the OR. Everyone goes through the same training, but if our staff members need someone there to help out because they're just getting started with the technology, they turn to the ORA champion. We actually took it a step further and identified two nurses

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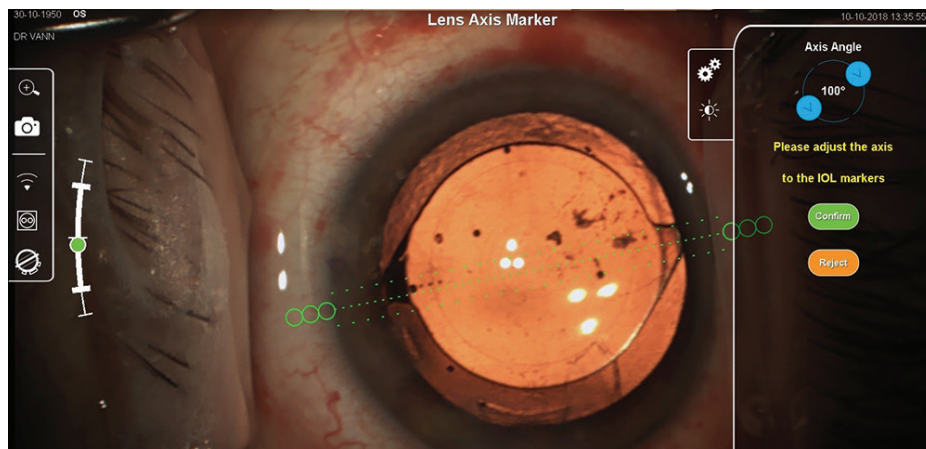


Figure 4. A view of the VerifEye Lynk toric axis marker that can be adjusted to record the final alignment of the IOL after confirmation with ORA.

For the VerifEYE Lynk technology, the payoff comes in improved patient satisfaction, improved outcomes, incredible word of mouth, great ratings, and less chair time after surgery because we hit the goal on the first try.

– Dr. Fisher

with an affinity for the technology and exposed them to all of the ORA cases for a period of time. Those two individuals became our in-house ORA experts, and they have become essential to training the rest of our staff.

With training and our two champions, we now have an ORA team that gets it. And having a well-oiled ORA team in the OR has translated into increased adoption of image-guided aberrometry by our anterior segment surgeons. Surgeons now walk into the OR, whether it's their first time or their hundredth time, and trust that our team will operate the technology without any hiccups.

Dr. Everett: I think that's important. Our staff needs to understand what we're doing. A lot of our staff has been in the cataract world for a long time, and they've seen a revolution in technology in recent years. They need to know what we're doing and how it all fits in the larger picture. Once they do, their enthusiasm will just accelerate.

Dr. Cionni: How do you use the ORA with VerifEYE Lynk to track outcomes?

Dr. Vann: Surgeons have very few products or materials that make it easy to track outcomes. Most of us who have been doing this for a while have

relied primarily on using software that isn't tied directly into our diagnostic technologies. The hardest part was entering all the data.

Now the AnalyzOR, as part of the VerifEYE Lynk system, automates all of that data transfer. One of the ORA's biggest values is how it enables us to track the data from our outcomes and see how we're doing very easily through a web-based system. It can tell us how well we're reducing astigmatism and achieving our target refraction and spherical equivalent. We can break it down into axial length, keratometry, postrefractive surgery eyes, RK eyes, and other specific sets. We can even compare different facilities. On top of that, to provide a bit of a competitive edge, it allows us to compare our data to global partners around the world. It's another framework to judge how we're doing. We can also export it to spreadsheets and use it in other ways—the database is not locked. Now I'm accustomed to tracking data from any new methodology. I record when I make the change and see what improvement, if any, it makes on my outcomes.

Finally, I like how the AnalyzOR works in the background to continually personalize constants to my cases as I continue to enter data and postoperative outcomes. As I continue to enter data over time, it continues to refine and personalize my ORA constants across the breadth of cases that I'll encounter. This is particularly evident with unusual cases, where it collects and interprets data gathered intermittently over time.

Dr. Cionni: I agree. And the more data that gets into the system, the more powerful it becomes. Initially, we just looked at spherical equivalent outcomes in all eyes. Now we can separate it into hyperopic eyes, short eyes, long eyes, postmyopic LASIK eyes, posthyperopic LASIK eyes, postRK eyes, RK with four incisions, RK with eight incisions, RK



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When surgeons say that they don't need aberrometry because we've got these incredible formulas, I think they're leaving out the most important piece of the puzzle—the cylinder.

– Dr. Everett

with more than eight incisions—you name it. We can continue to stratify the data further as we continue to enter data. We're really just at the tip of the iceberg with AnalyzOR's ability to help us become better and better each year. It is a very powerful tool.

Dr. Vann: There are over 1.4 million data points now in the AnalyzOR database.* That's an enormous amount of data—the largest database I know of for tracking cataract outcomes.

Dr. Cionni: And it's growing every day. It's just going to get larger and larger. Surgeons who are using intraoperative aberrometry should add every postoperative result where we have confidence in the refraction. If we want to include our outcomes in the database, we have to make certain that we have experienced techs performing that refraction. If we track outcomes that include bad refractions, they will skew our data. We also should wait at least 3 weeks after surgery before evaluating the postoperative result.

Dr. Cionni: We've talked about intraoperative aberrometry's marriage to VERION with the VerifEYE Link, and everybody seems to agree that bringing these two wonderful technologies together can be quite powerful. We've also talked about the value of adopting aberrometry, why we should consider image guidance, and how to maximize the technology's functionality.

What do you think is the main message for your peers about the ORA with VerifEYE Link?

Dr. Sales: I'd say my take-home point is that image-guided aberrometry helps you meet patients' high expectations, which are only growing. And like other new surgical technologies, it has really helped us to rally the troops by having a champion for the technology in the operating room.

Dr. Fisher: All of these new technologies demand some time from surgeons and staff, in order to master and get the most from them. That time is an investment. For the VerifEYE Link technology, the payoff comes in improved patient satisfaction, improved outcomes, incredible word of mouth, great ratings, and less chair time after surgery because we hit the goal on the first try. These things make the up-front time investment more than pay for itself.

Dr. Everett: One thing I'd point out is that we've all met people who don't yet understand the technology. I've heard a lot of the pushback on ORA: "The formulas are so good—why do I need ORA? Why do I need VerifEYE Link?" What they don't realize is that it's all about residual astigmatism.

The amount of residual cylinder we leave behind determines how happy patients will be with their surgical outcomes. Without question,

aberrometry and now VLink have allowed me to feel very confident that I'm going to leave only the smallest possible amount of residual cylinder, which will give my patients the uncorrected vision they want. In my own review of 125 consecutive toric eyes, we're talking about 97% of patients with less than 0.75 D and 91% with less than 0.50 D. When you can nail the cylinder like that, you're making a huge difference in outcomes. When surgeons say that they don't need aberrometry because we've got these incredible formulas, I think they're leaving out the most important piece of the puzzle—the cylinder.

Dr. Vann: Aberrometry is really a two-part system. There's what we see in the operating room, and then there's very much this living, breathing, tool called the AnalyzOR cloud, which allows us to track and continue to refine our outcomes. It allows us to pinpoint the areas in the practice where outliers might exist so we can address and improve them. Now we get a seamless process by combining aberrometry with VerifEYE Link, which gives us image guidance to eliminate some transcription issues, as well as prevent problems with registration, incorrect axes, or even incorrect eyes. It gives our whole team the confidence that we're doing the very best for our patients and giving them the best experience.

Dr. Cionni: Well said. It's great to have confidence that I'm reducing the



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possibility of human errors by keeping everything digital and higher confidence that I'm going to hit the target refraction. That's paramount for me. I want my patients to be thrilled with their vision at day one, and certainly by week one. It also means that the patients will tell all their friends about their wonderful results. Usually, when we do something to try to improve results, it

can make us less efficient. But with this system, not only are we reducing errors and increasing confidence that we'll get the expected outcomes, we're also increasing efficiency. I'm so glad we've incorporated it into our practice. ■

Please refer to the product's operator's manuals and DFU⁵⁻⁸ for indications, contraindications, and warnings.

1. Koch DD, Hill W, Abulafia A, et al. Pursuing perfection in intraocular lens calculations: I. Logical approach for classifying IOL calculation formulas. *J Cataract Refract*

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2. Ianchulev T, Hoffer KJ, Yoo SH, et al. Intraoperative refractive biometry for predicting intraocular lens power calculation after prior myopic refractive surgery. *Ophthalmology.* 2014;121(1):56-60.

3. Cionni RJ, Dimalanta R, Breen M, et al. A large retrospective database analysis comparing outcomes of intraoperative aberrometry with conventional preoperative planning. *J Cataract Refract Surg.* 2018;44(10):1230-1235.

4. Woodcock MG, Lehmann R, Cionni RJ, et al. Intraoperative aberrometry versus standard preoperative biometry and a toric IOL calculator for bilateral toric IOL implantation with a femtosecond laser: one-month results. *J Cataract Refract Surg.* 2016;42(6):817-825.

5. ORA System User Manual.

6. Verion System User Manual.

7. Centurion System User Manual.

8. LenSx User Manual.

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