September / October 2025
#80

the Ophthalmologist®

The Green Brigade

Showcasing ophthalmology's influential voices on sustainability

10

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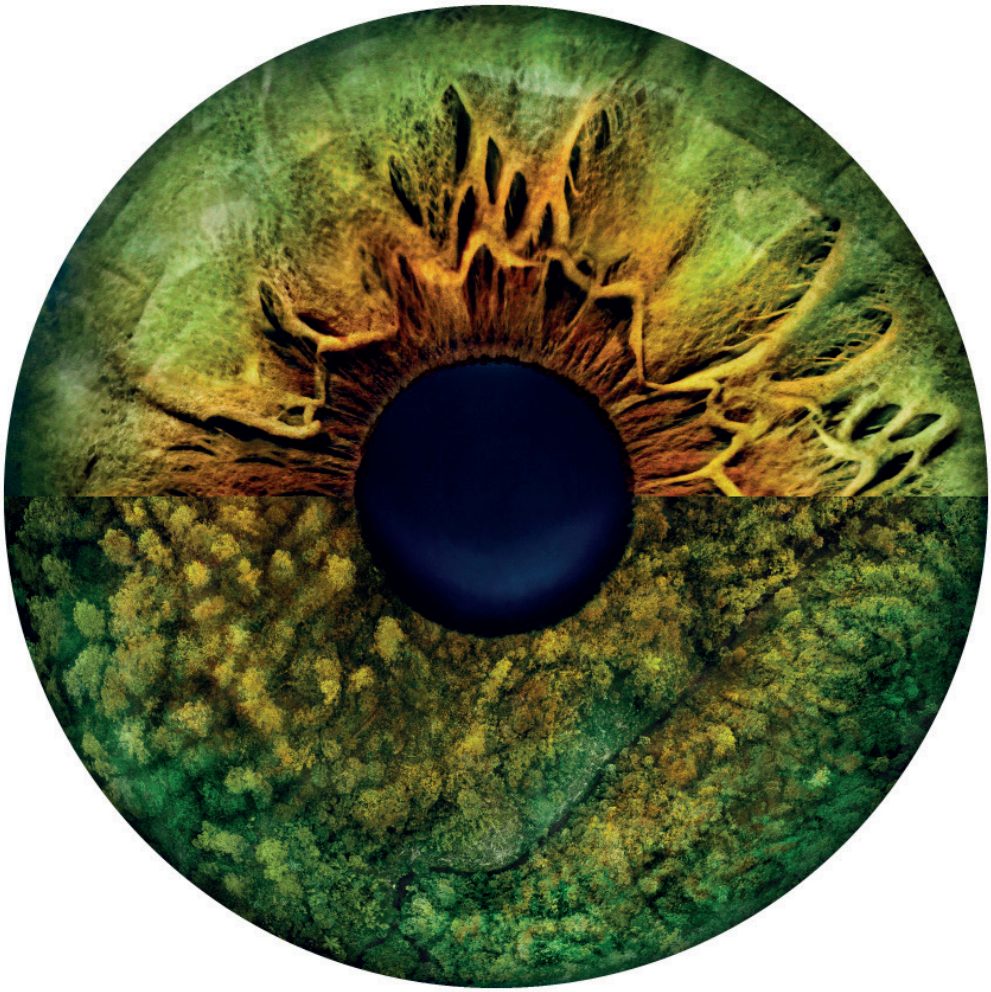

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New Visions in Cataract & Refractive

Our Rising Stars feature celebrates young ophthalmologists who are already making remarkable contributions to the field

Each year, The Ophthalmologist spotlights a new generation of innovators. This year we focus on the **cataract and refractive** space – a sector that sits at the crossroads of medical necessity and patient-driven demand, and one that continues to evolve at breathtaking pace.

What is striking about this year's honorees is not just their technical expertise, but also the breadth of their vision. **Zeba A. Syed** exemplifies the academic surgeon-educator. **Jorge L. Alió del Barrio** is pushing the boundaries of refractive surgery with new optical designs for intraocular lenses. **Aakriti Shukla** is bridging cataract and glaucoma management, advancing minimally invasive glaucoma surgery (MIGS) alongside cataract procedures to improve patient outcomes and reduce medication reliance. **Benjamin Stern** is redefining the very concept of cataract surgery. **Imane Tarib** combines her fellowship training with a passion for global ophthalmology and public engagement. And **Joaquín Fernández** is demonstrating how artificial intelligence can be responsibly integrated into refractive surgery – enhancing precision, predicting outcomes, and ensuring that evidence remains the bedrock of progress.

Together, these six Rising Stars remind us that the future of cataract and refractive surgery will be defined not only by technology, but by those with the boldest ideas.

Julian Upton,
Group Editor

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Wide Disparities in IRD Diagnosis

Nationwide study shows jump in prevalence of IRDs

A large-scale American Journal of Ophthalmology study has offered the most comprehensive overview to date on the incidence and prevalence of inherited retinal diseases (IRDs) in the US.

Between 2016 and 2023, the overall prevalence of IRDs in the US nearly doubled – from 58 to 106 per 100,000 persons. This 1.84-fold rise was complemented by a significant 24% increase in annual incidence over the same period. Rather than an increase in IRDs, the findings strongly indicate that improved diagnostics – likely driven by greater availability of next-generation sequencing (NGS) and heightened clinical trial activity requiring genetically confirmed diagnoses – are responsible for these figures. Retinitis pigmentosa (RP) remains the most prevalent IRD, with a 2023 rate of 39.3 per 100,000. In contrast, rarer conditions such as achromatopsia, choroideremia, and congenital stationary night blindness showed subtler but upward trends.

Leveraging data from over 117 million de-identified electronic health records (EHRs) via the TriNetX platform, the study provides epidemiological trends and examinations of disparities by race, sex, and age.

A striking pattern of racial stratification emerges: white patients were consistently more likely to receive an IRD diagnosis compared to Black and Hispanic patients across all studied conditions. For example, whites had 1.25 times the odds of an IRD diagnosis compared to Black individuals, and 1.37 times that of Hispanic individuals. These disparities may reflect a combination of allele frequency differences, systemic inequities in access to care, and limitations in the diagnostic utility of gene panels underrepresenting non-European ancestries.

The pivotal nationwide analysis underscores the pressing need to broaden inclusion in genetic research and improve access to specialized ophthalmic services for underrepresented populations. As gene and gene-agnostic therapies proliferate, real-world epidemiological data such as these will be vital in guiding treatment strategies and trial recruitment to ensure equitable care for all patients with inherited retinal diseases.

Surf's Up?

Eye study indicates water sports participants could be an overlooked risk group for AMD

Credit: Adobestock.com

A recent commentary published in Eye has raised a compelling hypothesis: surfers and scuba divers may represent an under-recognized population at risk for age-related macular degeneration (AMD) and other ocular pathologies linked to ultraviolet (UV) and high-energy visible (blue) light exposure.

While extensive literature supports the association between UV/blue light exposure and conditions such as pterygium, cataractogenesis, and AMD, research has focused predominantly on terrestrial populations – namely outdoor workers and welders (as well as those living in high UV-index regions).

Davinia Beaver and Carly Hudson of Bond University, Queensland, Australia conducted a scoping review on existing literature around UV and blue light exposure for water sport participants. "We found very limited data," observes Beaver, "which highlighted a gap in the literature and the need for further research in this area."

The pair are calling for interdisciplinary collaboration between ophthalmologists, sports scientists, and environmental optics researchers to address this knowledge gap.

Beaver added, "[T]hese activities are a big part of our community here on the east coast of Australia, and anything useful that may come out of this study will only serve to benefit the health and wellbeing of individuals who regularly engage in these activities."

QUOTE *of the month*

"We talk about sustainability a lot on podiums, but the actions haven't really trickled down to the actual hospitals or clinics in a meaningful way… and the mountains of waste continue!"

Radhika Rampat, founder and co-chair of the American European Congress of Ophthalmic Surgery Green Working Group

Sleep, the Best Medicine?

IOVS study highlights sleep as modifiable risk factor in age-related ocular disease

A recent study UK Biobank data has shed new light on the role of sleep duration and quality in the development of age-related ocular diseases – including cataract, primary open-angle glaucoma (POAG), diabetic retinopathy (DR), and age-related macular degeneration (AMD).

The analysis – conducted at the Eye and ENT Hospital, Fudan University, Shanghai – revealed a clear U-shaped association between sleep duration and the risk of cataract, POAG, and DR, with seven hours per night emerging as the optimal duration people should be sleeping.

Both shorter (<6 hours) and longer (≥9 hours) sleep durations were linked to significantly increased risks. For example, sleeping less than four hours per day was associated with a 19% increased risk of cataract, while sleeping for more than nine hours was associated with elevated risks for both POAG and DR. There was no significant association observed between sleep duration and AMD.

Poor sleep quality was independently associated with increased risks of cataract and POAG. Frequent insomnia and daytime dozing emerged as two specific sleep behavior traits that increased the risk of cataract, POAG, and – to a lesser extent – AMD.

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Rapid onset
Demonstrated clinically and statistically significant total corneal fluorescein staining improvement by Day 15 in clinical studies.[4,5]

High tolerability
99.8% of patients experienced no or mild instillation site pain.[4,5]

INDICATION AND USAGE

VEVYE® (cyclosporine ophthalmic solution) 0.1% is indicated for the treatment of the signs and symptoms of dry eye disease.

IMPORTANT SAFETY INFORMATION

Warnings and Precautions

- **Potential for Eye Injury and Contamination** – To avoid the potential for eye injury and/or contamination, patients should not touch the bottle tip to the eye or other surfaces.
- **Use with Contact Lenses** – VEVYE® should not be administered while wearing contact lenses. If contact lenses are worn, they should be removed prior to administration of the solution. Lenses may be reinserted 15 minutes following the administration of VEVYE®.

Adverse Reactions

- In clinical trials with 738 subjects receiving at least 1 dose of VEVYE®, the most common adverse reactions were instillation site reactions (8%) and temporary decreases in visual acuity (3%).
- You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch, or call 1-800-FDA-1088.

For additional information about VEVYE®, please see Brief Summary on adjacent page and Full Prescribing Information at vevye.com.

*Ex-vivo porcine corneal penetration study. Clinical relevance is unknown. †In pooled clinical studies. |
1. VEVYE® (cyclosporine ophthalmic solution) 0.1% [package insert], Harrow IP, LLC; 2024. **2.** Restasis® (cyclosporine ophthalmic emulsion) 0.05% [package insert]. Allergan, LLC; 2024. **3.** Cequa® (cyclosporine ophthalmic solution) 0.09% [package insert]. Sun Ophthalmics, LLC; 2024. **4.** Sheppard et al., Water-free 0.1% Cyclosporine A Solution for Treatment of Dry Eye Disease: Results of the Randomized Phase 2B/3 ESSENCE Study. Cornea 2021;00:1–8. **5.** Akpek et al., Efficacy and Safety of a Water-Free Topical Cyclosporine, 0.1%, Solution for the Treatment of Moderate to Severe Dry Eye Disease The ESSENCE-2 Randomized Clinical Trial. *JAMA Ophthalmol*. doi:10.1001/jamaophthalmol.2023.0709. April 6, 2023. **6.** Data on file.

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BRIEF SUMMARY – PLEASE SEE THE VEVYE® PACKAGE INSERT FOR FULL PRESCRIBING INFORMATION

INDICATIONS AND USAGE:

VEVYE® (cyclosporine ophthalmic solution) 0.1% is indicated for the treatment of the signs and symptoms of dry eye disease.

DOSAGE AND ADMINISTRATION:

Instill one drop of VEVYE® twice a day in each eye approximately 12 hours apart.

WARNINGS AND PRECAUTIONS

- **Potential for Eye Injury and Contamination –** To avoid the potential for eye injury and/or contamination, patients should not touch the bottle tip to the eye or other surfaces.
- **Use with Contact Lenses –** VEVYE® should not be administered while wearing contact lenses. If contact lenses are worn, they should be removed prior to administration of the solution. Lenses may be reinserted 15 minutes following the administration of VEVYE®.

ADVERSE REACTIONS

Clinical Trial Experience - Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

In clinical trials with 738 subjects receiving at least 1 dose of VEVYE®, the most common adverse reactions were instillation site reactions (8%) and temporary decreases in visual acuity (3%).

USE IN SPECIFIC POPULATIONS

PREGNANCY

Risk Summary

There are no adequate and well-controlled studies of VEVYE® administration in pregnant women to inform a drug-associated risk. Oral administration of cyclosporine to pregnant rats or rabbits did not produce teratogenicity at clinically relevant doses. VEVYE® doses are approximately 4,700 times lower than recommended oral doses, with blood concentrations being undetectable after topical administration.

Data

Animal Data: Oral administration of cyclosporine oral solution to pregnant rats or rabbits was teratogenic at maternally toxic doses of 30 mg/kg/day in rats and 100 mg/kg/day in rabbits, as indicated by increased pre- and postnatal mortality, reduced fetal weight and skeletal retardations. These doses (normalized to body weight) were approximately 7,250 and 48,000 times higher than the daily maximum recommended human ophthalmic dose (MRHOD) of 0.67 mcg/kg/day, respectively.

No adverse embryofetal effects were observed in rats or rabbits receiving cyclosporine during organogenesis at oral doses up to 17 mg/kg/day or 30 mg/kg/day, respectively (approximately 4,100 and 14,500 times higher than the MRHOD, respectively).

An oral dose of 45 mg/kg/day cyclosporine (approximately 10,900 times higher than MRHOD) administered to rats from Day 15 of pregnancy until Day 21 postpartum produced maternal toxicity and an increase in postnatal mortality in offspring. No adverse effects in mothers or offspring were observed at oral doses of up to 15 mg/kg/day (3600 times greater than MRHOD).

LACTATION

Risk Summary

Cyclosporine is known to be excreted in human milk following systemic administration but excretion in human milk after topical treatment has not been investigated. VEVYE® doses are approximately 4,700 times lower than recommended oral doses of cyclosporine, with blood concentrations being undetectable after topical administration. However, caution should be exercised when VEVYE® is administered to a nursing woman.

PEDIATRIC USE

Safety and effectiveness in pediatric patients below the age of 18 years have not been established.

GERIATRIC USE

No overall difference in safety or effectiveness has been observed between elderly and younger patients.

NONCLINICAL TOXICOLOGY

Carcinogenesis, Mutagenesis, Impairment of Fertility

Carcinogenesis

Evaluation of the potential carcinogenicity of cyclosporine was conducted in male and female mice and rats. In a 78-week oral (diet) mouse study, at doses of 1, 4, and 16 mg/kg/day, evidence of a statistically significant trend was found for lymphocytic lymphomas in females, and the incidence of hepatocellular carcinomas in mid-dose males significantly exceeded the control value.

In a 24-month oral (diet) rat study, conducted at 0.5, 2, and 8 mg/kg/day, pancreatic islet cell adenomas significantly exceeded the control rate in the low dose level. The hepatocellular carcinomas and pancreatic islet cell adenomas were not dose related. The low doses in mice and rats were approximately 120 times higher than the maximum recommended human ophthalmic dose (0.67 mcg/kg/day), normalized to body surface area.

Mutagenesis

In genetic toxicity tests, cyclosporine has not been found to be mutagenic/genotoxic in the Ames Test, the V79-HGPRT Test, the micronucleus test in mice and Chinese hamsters, the chromosome-aberration tests in Chinese hamster bone-marrow, the mouse dominant lethal assay, and the DNA-repair test in sperm from treated mice. Cyclosporine was positive in an in vitro sister chromatid exchange (SCE) assay using human lymphocytes.

Impairment of Fertility

Oral administration of cyclosporine to rats for 12 weeks (male) and 2 weeks (female) prior to mating produced no adverse effects on fertility at doses up to 15 mg/kg/day (approximately 3,600 times higher than the maximum recommended human ophthalmic dose).

PATIENT COUNSELING INFORMATION

Risk of Contamination

Advise patients to wash their hands well before each use. Advise patients not to allow the dropper tip to touch the eye or any other surface, as this may contaminate the solution.

Contact Lens Wear

Advise patients not to touch the dropper tip to any surface to avoid contaminating the contents.

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CAM and Ocular Surface Disease

By Hardeep Kataria

Understanding the biological utility of AMT

The most important component of AMT is the high molecular weight hyaluronic acid species, including the heavy chain-hyaluronan/pentraxin 3 complex (HC-HA/PTX3). HC-HA/PTX3 enables AMT to support limbal stem cells, facilitating the support and growth of the corneal epithelium. AMT reduces inflammation by facilitating neutrophil apoptosis, polarizing macrophages to facilitate anti-inflammatory processes, and suppressing specific lymphocyte activation. Its ability to act as a bandage treatment enables the anti-scarring function of AMT, as it protects the epithelium from damage caused by constant blinking and allows healing. The regenerative properties of AMT have been demonstrated by an increase in sub-basal corneal nerve density and corneal sensitivity after a single treatment, with resolution in corneal punctate staining and improved tear film stability also being observed.

These biological components and their resultant biological efficacy are affected differently by the various methods used for the preservation of AMT; the main preparations used in ophthalmology are dehydrated amniotic membrane and cryopreserved amniotic membrane (CAM). Though dehydration methods preserve the structure of the tissue, enabling it to be used as a scaffold for cellular growth, it does not maintain the HC-HA/PTX3 complex.

Current uses of CAM

I typically employ the healing properties of CAM in conditions in which the corneal epithelium is affected, such as moderate to severe dry eye disease (DED), corneal ulcers like those due to herpetic infections, and bacterial keratitis that may result from contact lens overwear . The ability of CAM to improve the health of the corneal epithelium has been demonstrated clinically in studies of DED, as CAM reduced corneal and conjunctival staining, as well as improved visual acuity, after five days of treatment with self-retained CAM. In one study, improvement in signs and symptoms were observed after only two days, with benefits lasting up to three months.

The speed with which CAM can improve the ocular surface is critical for patients facing scheduled cataract surgery, and thus this is another area where I frequently use CAM. Before cataract surgery is undertaken, obtaining precise biometry and keratometry is critical to ensure optimal visual outcomes. The quality of these preoperative measurements for intraocular lens selection depends on the health of the ocular surface. If the ocular surface needs improvement ahead of surgery – and especially if the patient is affected by an acute condition – I utilize CAM to heal the epithelium quickly, enabling the surgery to be safely performed to achieve optimal postoperative visual outcomes.

CAM also has the capability of improving corneal sensitivity and promoting corneal nerve regeneration, marking it as a mainstay treatment for patients with DED, neurotrophic keratopathy (NK), and possibly even corneal neuropathic pain. One study of DED patients showed that patients who used CAM had improvement in both the signs and symptoms of DED, as well as in corneal nerve density, corneal sensitivity, and corneal topography. This is thought to be due to the presence of neurotrophic factors, especially nerve growth factors, which promote corneal nerve regeneration.

Potential future applications

One area in which I would be interested to see more data is its ability to restore and regenerate corneal nerve anatomy, function, and integrity, such as in corneal neuropathic pain and NK. The more we learn about ocular surface disease, the more we understand that symptoms do not always correlate with clinical findings, and I think the role of corneal nerves could be critical in understanding this disconnect. Thus, I would love to see more data on what happens to the structure and function of corneal nerves when they are underactive in NK, and when they are overactive in corneal neuropathic pain after application of CAM.

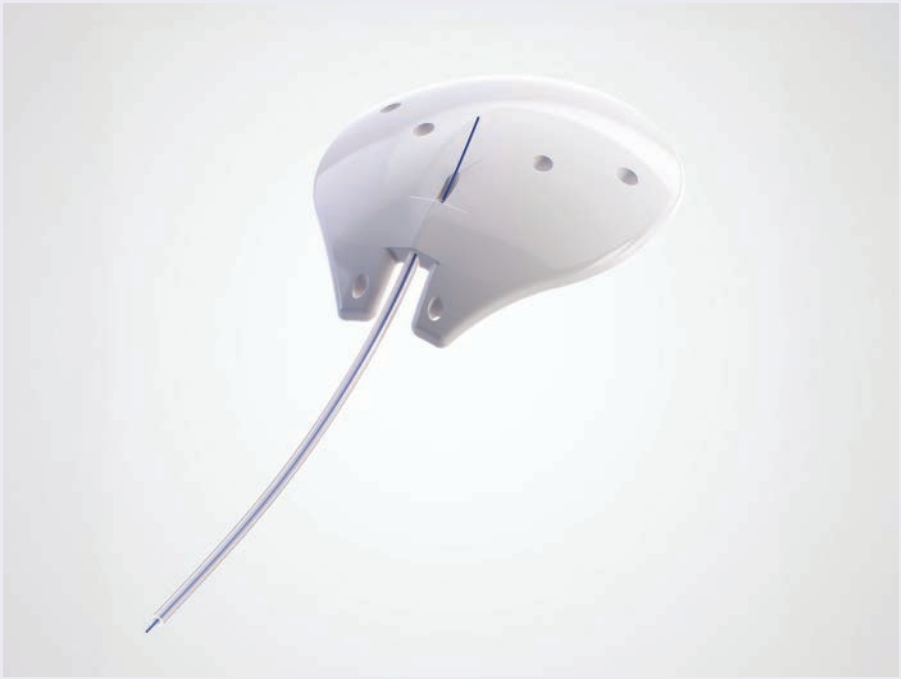
Another area that deserves more investigation is the efficacy of CAM when it is layered with other treatments for nerve dysfunction, known as the "sandwich method." In my own practice, I have found that this method of combining treatments is highly effective for Stage 1 and Stage 2 NK. In this approach, I place a CAM for one or two days to try to stabilize epithelium, after which I prescribe an eight-week course of recombinant human nerve growth factor (cenegermin 0.002%). After the treatment, I place another CAM due to the regenerated epithelium being so fragile, especially in patients with severe NK. Layering the treatments supports both corneal epithelial regeneration and corneal nerve regeneration. With so many treatment options available for ocular surface disease, it can be tricky to elucidate how to combine and layer treatments, but more often than not, complex cases require a combination of treatments. The availability of clinical data, or even case studies, assessing this combination of treatments would be helpful for clinicians when they are creating customized treatment plans for patients.

While the use of CAM is already well established for the treatment of many conditions affecting the ocular surface, I look forward to further research that will unlock even more of its numerous applications.

See references online.

Ahmed CLEARPATH® ST

Introducing the Ahmed ClearPath® ST: Evolving Design for Evolving Needs in Glaucoma Surgery



The Ahmed ClearPath® ST (ACP ST) represents the latest advancement in glaucoma drainage device design, offering surgeons a smaller-lumen, non-valved implant engineered to address evolving surgical challenges and techniques in the management of refractory glaucoma.

Building upon the clinical success and adoption of the original Ahmed ClearPath®, a non-valved device introduced to the market in 2019, the ACP ST offers a refined solution for glaucoma surgeons seeking greater flexibility, predictability, and patient comfort in the management of refractory cases. A distinguishing feature of the ACP ST is its smaller tube lumen, with an inner diameter of 127 µm and 457 µm outer diameter.

"For patients with prior conjunctival glaucoma surgeries, ACP ST's smaller tube will provide a reliable and controlled option to achieve target IOPs and may reduce the risk of tube erosion," says Dr. Gabriel Lazcano-Gómez, Associate Professor at the Department of Glaucoma, Asociación para Evitar la Ceguera en México (APEC).

To streamline intraoperative efficiency, the ACP ST is delivered as a fully integrated surgical system, packaged with a 6-0 Prolene ripcord suture pre-threaded into the tube and an included 25-gauge needle for the scleral tunneling. These enhancements reduce variability and simplify the procedure.

"Utilizing the ripcord from the same manufacturer ensures consistency in flow control," explains Dr. Lazcano-Gómez. "Minor differences in 6-0 Prolene from various suppliers can influence performance and clinical outcomes, so this uniformity is clinically meaningful."

The ACP ST also incorporates a flexible, globe-conforming plate material that facilitates a natural fit and encourages the formation of a diffuse, low-lying bleb. The device is available in two plate sizes: the model 250, which supports true single-quadrant implantation without rectus muscle isolation, and the model 350, which features a winged design to bypass rectus muscle attachment points. "The flexibility of the 250 model is excellent. You can roll the plate and insert it through a smaller incision with minimal manipulation," Dr. Lazcano-Gómez shares. "Its low-profile design also helps avoid the formation of high, thick blebs that can cause patient discomfort or cosmetic concerns."

Another surgical refinement is the anterior positioning of the suture eyelets, which facilitates posterior plate placement and improves intraoperative handling. "The anterior eyelets allow me to secure the plate without enlarging the peritomy," adds Dr. Lazcano-Gómez. "This preserves more conjunctiva and reduces potential scarring, particularly valuable in eyes that may need future surgical interventions."

From a postoperative standpoint, Dr. Lazcano-Gómez has observed that the ACP ST offers meaningful clinical advantages. In ligated tube scenarios, outcomes are comparable to the original Ahmed ClearPath® at six weeks. However, in non-ligated cases, surgeons may observe significant IOP reductions as early as postoperative day one, a benefit not consistently seen with other non-valved tubes in the market.

As glaucoma treatment paradigms advance, the Ahmed ClearPath® ST represents a thoughtful convergence of design innovation, surgical efficiency, and patient-centered performance. It reflects New World Medical's continued commitment to supporting glaucoma specialists with refined tools that elevate outcomes and surgical confidence.

NEW WORLD MEDICAL

The Green *Brigade*

Showcasing leading voices on sustainability in ophthalmology

Our ongoing Standpoint on Sustainability (SOS) series features many of ophthalmology's big names giving their thoughts on how the industry might achieve more sustainable ways of working, the obstacles ahead, and what the future might look like.

Here we present a rundown of some of the more pertinent points that our illustrious guest contributors have raised around the areas of research, greenwashing, challenges, and priorities.

RESEARCH

Evidence-based research is a crucial starting point to any process that aims to implement real change in an established industry. Elaborating on her own work on sustainability, Cassandra Thiel, President and CEO of Clinically Sustainable Consulting, Wisconsin, writes: "I conduct research quantifying the emissions of medical devices and procedures. I've done some life cycle assessments and carbon footprints [calculations] in ophthalmology. We've assessed waste and environmental emissions of a variety of procedures, but I've mostly worked on cataract surgery. I've analyzed resource-use and emissions from cataract surgeries all over the world!"

Thiel notes that her research into more sustainable ways of working started in a developing region of the world – Southern India, to be precise. "The Aravind Eye Care System… was able to conduct phacoemulsification with only 5% of the greenhouse gas emissions of the UK," Thiel says. This insight led Thiel and her team to create Eyefficiency, a tool which allows surgical teams worldwide to benchmark and monitor their productivity, costs, carbon emissions, and waste generation during cataract surgery.

In Ireland, John Doris, President of the Irish College of Ophthalmologists (ICO), detailed how the ICO's annual conference included ophthalmology trainee Emilile Mahon relaying the findings of her research into the ecological impact of phacoemulsification cataract surgery.

Meanwhile, in Asia, Chris Lim – a cornea, refractive, and ocular surface surgeon based at the National University Hospital in Singapore – oversees the National University Health System Ophthalmology cluster's sustainability initiatives. Lim and his team are particularly interested in the health impact of microplastics and nanoplastics in medical devices.

"The direct impact of our prescribing and use of ophthalmic devices on our patients' health is an under-explored issue," Lim says. "There has been increasing concern around the identification of contaminants, such as micro and nanoplastics and additive chemicals, such as per- and polyfluoroalkyl substances (PFAS)... Yet the use of PFAS in the manufacture of medical devices is neither prohibited nor regulated." He adds, "There is so much that we do not know about the impact of such exposure on ophthalmic and human health. We urgently need robust and reliable independent data to guide prescribing and patient education within our practice."

John Hovanesian, a cataract and cornea specialist at Harvard Eye Associates in southern California, and Assistant Clinical Professor at the UCLA Jules Stein Eye Institute,also points to Avarind as an example of a system that "wastes a small fraction of what we do in the US. He adds that Avarind has "demonstrated, through literally millions of surgeries, that their methods are just as safe – at least from a standpoint of postoperative endophthalmitis – as surgery in the US."

"We urgently need robust and reliable independent data to guide prescribing and patient education within our practice."

The Aravind Eye Care example also spurred David Chang to co-found EyeSustain, a global coalition dedicated to reducing the environmental impact of ophthalmic care. Cataract surgeons at Avarind have "continually analyzed what supplies can safely be reused, and this has produced a large amount of data that can guide all of us to safely reduce waste," he says. It's precisely this type of action that is helping bring international attention to the excessive waste generated in the US.

GREENWASHING

A term coined by Jay Westerveld back in 1986 to convey the hypocrisy he observed at a sprawling Fiji hotel where guests were asked to reuse their towels to help save the environment – all while the hotel was causing ecological damage by expanding its real estate interests – "greenwashing" has since become a regular term. It is commonly used to disparage a company's ostensible sustainable practices as insincere marketing strategies. Certainly within ophthalmology there are companies paying lip service to sustainability (using buzzwords like "plastic neutrality" and "carbon neutral manufacturing") without actually following through on their claims.

"We need to be vigilant against greenwashing" says Chris Lim, warning that "deliberate or unwitting endorsement of such behavior may have long-lasting consequences on efforts to develop and grow a community of practice focused on sustainability."

Francesco Carones, Medical Director and Physician CEO at Advalia Vision in Milan, Italy, also laments how "eco-sustainability has [now] become fashionable, but the reality is that still not enough is being done in practice." Radhika Rampat, founder and co-chair of the AECOS (American European Congress of

Ophthalmic Surgery) Green Working Group (GWG), agrees: "We talk about it a lot on podiums," she says, "but the actions haven't really trickled down to the actual hospitals or clinics in a meaningful way… and the mountains of waste continue!"

However, there is another side to this debate: "Greenwashing seems to be an increasingly easy accusation to make, without offering effective and achievable alternatives," explains David Lockington, Consultant Ophthalmologist at the Tennent Institute of Ophthalmology, NHS Greater Glasgow and Clyde, Scotland, UK. "We need to remember that taking a small number (surgical footprint) and multiplying it by a big number (number of procedures) ends up with an even bigger number. Ophthalmology does an enormous quantity of high-impact procedures worldwide, so the numbers get big. But it should be considered in the context of the real-world benefits of enabling many patients to get back to work and contributing meaningfully to society."

The question should be, "How can we deliver more efficiently with less waste?" says Lockington. "We would do well to understand that effective worldwide solutions require a united, global response. Outlawing print programs and conference bags is not going to save a world which groans under an enormous ongoing carbon footprint from the continual atrocities and destructive nature of wars."

CHALLENGES

In a practice that is highly dependent on single-use instruments, sterile packaging, and energy-intensive technology, integrating sustainability into ophthalmology can present unique challenges. But "the primary challenge we face in ophthalmology is simply to start and take that first step!" says Andrés Benatti, a renowned cornea and refractive surgeon and LASIK specialist based in Córdoba, Argentina. Benatti believes his colleagues face "five fundamental fears when considering converting their ophthalmology practice into a sustainable one: 1) It doesn't pertain to my business. 2) I have to overhaul the entire operation. 3) It requires too much effort. 4) The timing isn't right in my country. 5) I don't see an economic benefit." To combat this reluctance and have ophthalmologists overcome these five fears, Benatti adds, "it's crucial to spread sustainability measures that are accessible to everyone, from sole ophthalmologists to large ophthalmology centers."

Ben LaHood, a cataract and refractive surgeon at Adelaide Eye and Laser Centre, and a consultant ophthalmologist at The Queen Elizabeth Hospital, Adelaide, Australia, says that "the most urgent challenge we have to overcome right now is apathy. We are all guilty of this to some degree, me included." He continues: "We're all busy, stressed, overcommitted, prioritizing patient care, trying miserably to have a work-life balance, and hoping to run profitable businesses and pay staff wages. To wedge another concern into that mix – one that provides no obvious immediate benefits, is potentially expensive, and takes up more precious mental bandwidth – is a challenge."

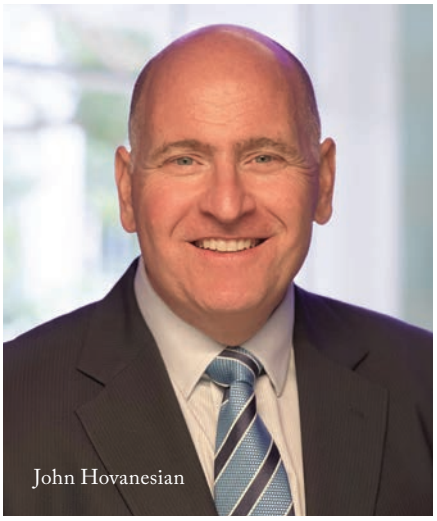
For Chris Lim, the main challenge is around awareness and education. "Many of my colleagues are shocked when they learn that the global healthcare sector is responsible for at least as much carbon emissions as the aviation industry. Once they've realized there is an urgent need to answer this call to action, attempts at gleaning information are often marred by misinformation and made worse by apocalyptic messaging… There is a whole heap of resources available out there, but it is increasingly challenging to separate the wheat from the chaff."

"Over the past decade we have continued to create a garbage-bag full of waste for every cataract operation, but at least now we know it is possible to do better," says LaHood. "We are starting to see Industry recognize that there is a groundswell of surgeons demanding that it does better. As that voice gets louder, more agile companies make positive changes and market pressure drives the big players to join in."


Cassandra Thiel


John Doris


Chris Lim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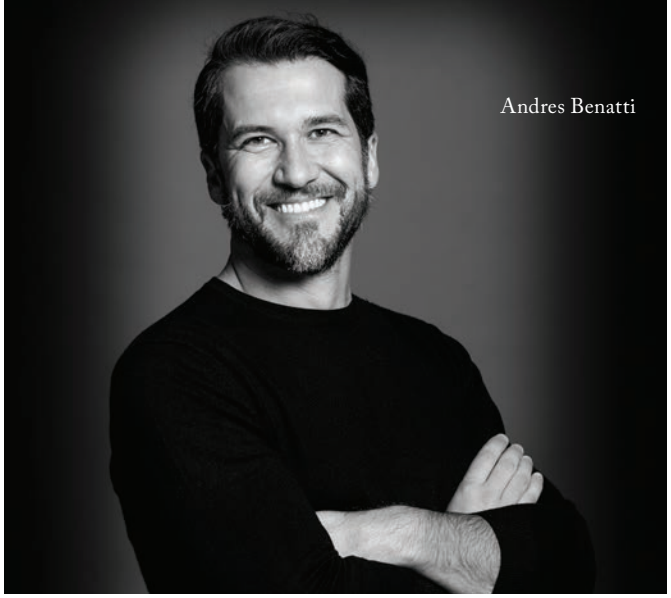
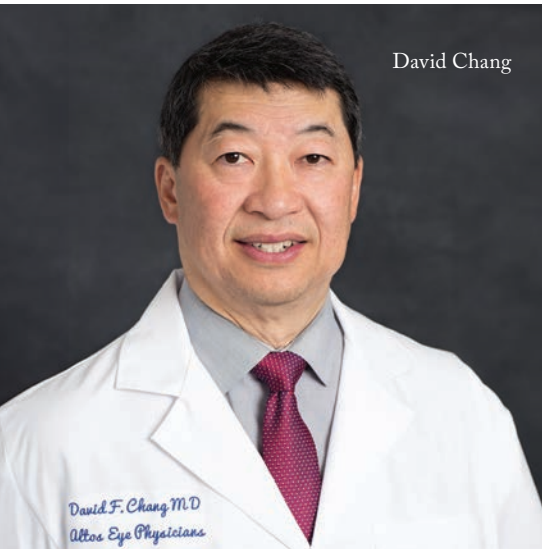
Radhika Rampat


David Lockington


Andres Benatti


Ben LaHood



David Chang


Barbara Erny


Marius de Beer

"And I'd like every physician to understand the connection between plastic waste and human health, as well as how climate change is detrimental to both ocular and general health…"

PRIORITIES

EyeSustain lists seven main things that ophthalmic surgeons can do to reduce waste. Co-founder David Chang says: "Everyone should urge their surgical facility to take our online pledge to consider improvements, such as using multidose topical drugs on multiple patients, monitoring custom packs to eliminate infrequently used components, and using alcohol-based hand scrub between cases. These measures reduce costs and waste."

Chang believes that "industry must prioritize and provide us with more multi-use products, devices, and drugs", and that "regulatory bodies should not mandate single use of every ophthalmic product by default" when there's no clear evidence that re-using a product is dangerous for a patient. "The World Health Organization (WHO) has declared that the climate crisis poses the single greatest threat to global public health. Regardless of our subspecialty, we are all physicians, and this should alarm and motivate us all."

Marius de Beer, Chief Sustainability Officer at HOYA Vision Care, says that "the most urgent sustainability priorities include reducing carbon emissions, managing water footprint, working on creating sustainable packaging solutions, and ensuring that quality eye care for all is a basic human right." He adds that "sustainability is about creating value, driving growth, and delivering long-term benefits for all stakeholders in our industry, from patients of different ages to our customers and the planet. It is not a temporary trend or a buzzword – it's here to stay."

Meanwhile, Barbara Erny, Adjunct Clinical Associate Professor of Pulmonary, Allergy & Critical Care Medicine at Stanford University, believes education is a vital component for having clinicians incorporate sustainability into their practices. "I would also like to see the global development of programs to recycle medical plastics (Australia and India are examples of countries with such facilities)," she says. "And I'd like every physician to understand the connection between plastic waste and human health, as well as how climate change is detrimental to both ocular and general health… I want to see every physician prioritizing the 'First, do no harm' principle by practicing in a sustainable way."

"We need to stop wasting so many resources and just get moving," says Cassandra Thiel. "Some of the changes are practice changes and some of them are policy changes. Manufacturers also need to focus on changes like creating circularity with their products and reducing wasted items. Initiatives with other stakeholders – such as governments and standards-setting bodies – should also be considered to enable and support medical practices becoming more resource-efficient."

"The principles of 'reduce, reuse, recycle' sound great, but what is the reality?" asks David Lockington. "It all depends on the financial climate, restraints, and incentives of the systems in which we currently live and work… We really need to disrupt the whole system to institute a new prioritization of these principles, from clinicians to industry to government, to deliver high-quality care which is also better for eyes, economics and our environment."

Chris Lim notes that the sustainability mindset will only work if it is adopted as a way of life. "The main question being whether this can be achieved fast enough to fulfill the Paris Agreement's ideal goal of limiting temperature increases to 1.5°C above pre-industrial levels."

"My simple wish," adds Ben LaHood, "is that individual surgeons begin to ask questions of their own practices, their industry partners, and their colleagues about what tiny things they could do to improve sustainability."

THE FUTURE

It may seem idealistic – and perhaps unrealistic to some – but with respected ophthalmic visionaries such as Ben LaHood, Cassandra Thiel, and David Chang leading the sustainability charge, and with non-profits such as EyeSustain being set up as a global coordinated effort to increase awareness, the momentum towards sustainability is gaining traction.

This momentum, coupled with institutions like the Aravind Eye Care System proving that sustainability can indeed be incorporated into eye hospitals in a practical and efficient manner, suggests we may be closer to achieving true sustainability in ophthalmology than one might have previously imagined.

the Ophthalmologist

POWER *List*

RISING *Stars*

The Ophthalmologist celebrates the up-and-coming wave of leaders in the cataract and refractive space

Dedicated to individuals in the earlier stages of their career, this year's Rising Stars feature celebrates the ophthalmologists who are beginning to make a sizable impact in the industry.

The honorees have been selected from a shortlist of names provided by our 2025 Power List alumni, some of whom have mentored or worked with these young ophthalmologists, or have heard good things about them through the ophthalmic grapevine.

For this year, we chose to focus on the cataract and refractive surgery space, where these six Rising Stars are demonstrating excellence and already making waves in a sector which, sitting at the intersection of clinical necessity and consumer demand, continues to rapidly advance.

Zeba A. Syed

Director of Cornea Fellowship and Associate Professor of Ophthalmology at Wills Eye Hospital, Philadelphia, Pennsylvania, US

Zeba A. Syed is a prolific author and educator engaged in cornea and anterior segment research; her contributions to this area of study range from clinical innovation in grafting, endothelial disease, and corneal diagnostics to surgical and refractive outcomes. She is the recipient of the John D. Bullock Ophthalmology Award from Harvard Medical School and an American Academy of Ophthalmology (AAO) Achievement Award. She has also been named a Heed Foundation Fellow, recognized as a 2024 Healio Honors honoree, and featured in MillennialEYE's "One to Watch" and Ophthalmology Management's "40 Under 40."

Speaking of her mentors, Syed says she has been fortunate to work with many incredible individuals over the years. One that stands out, however, is Carol Karp. Karp's "ability to seamlessly integrate clinical care with impactful research, while always upholding the highest level of integrity and dedication to patients, has been deeply influential," says Syed. "Her approach to clinical research has played a key role in shaping my own research career."

One of Syed main ambitions now is to "grow a research portfolio that enhances clinical care, supports evidence-based practice, and fosters ongoing innovation and collaboration in the field of cornea." In her time away from ophthalmology, she enjoys spending quality time with family and friends, discovering new restaurants around Philadelphia, and traveling – especially on adventurous road trips. When she finds the time to relax, her favorite indulgence is watching Bollywood movies.

Jorge L. Alió del Barrio

Medical Director at Vissum (Miranza Group), Alicante, and Associate Professor in Ophthalmology at the Universidad Miguel Hernández, Alicante, Spain

Jorge L. Alió del Barrio graduated in Medicine and Surgery from the Universidad Autónoma de Madrid in 2008. He specialized in ophthalmology at the University Hospital of Ramón y Cajal, Madrid, and went on to complete Corneal Fellowships in London at Guy's and St Thomas' Hospital and Moorfields Eye Hospital.

Of his many mentors, Alió del Barrio says, "At different moments of my career they shaped the professional I am today, from my residency consultants at Ramon y Cajal Hospital in Madrid to those from my fellowships in London. Special mention [should be made] to my former cornea co-fellows at Moorfields, since probably I learnt more from them than from anybody else during those years. Today they are not only colleagues but also lifelong friends. And of course, I can't forget to mention my father, Jorge Alió, who helped to guide my journey into refractive surgery and is an example of an inexhaustible spirit."

Alió del Barrio believes that the most exciting thing happening in the cataract & refractive space right now is "the introduction of newer optical designs for multifocal IOLs skipping diffractive optics" capable of reducing the current photic phenomena while still allowing for full range of focus.

Away from his work, he confesses that, deep down, he is really "a nerdy freak." He says, "I spend my hobby time painting Warhammer war miniatures, which actually complements my surgical skills perfectly. Sometimes miniature painting requires more precision than a complex corneal surgery!"

Aakriti (Aaki) Shukla

Leonard A. Lauder Associate Professor of Ophthalmology at the Department of Ophthalmology, Columbia University Irving Medical Center, New York, USA

An award-winning clinician-investigator, Aakriti Shukla is committed to advancing outcomes for patients with glaucoma by merging science with clinical care. Her research focuses on structure-function relationships, surgical outcomes, and sustainability in glaucoma, and she currently leads a clinical trial studying nicotinamide and pyruvate as potential neuroprotective agents.

"As a cataract and glaucoma specialist, one of the most exciting developments in the cataract and refractive space right now is the increasing integration of minimally invasive glaucoma surgery (MIGS) with cataract surgery," Shukla explains. "This combination not only improves vision but also allows for better control of glaucoma with reduced medication burden – an enormous win for glaucoma patients."

In next five years, Shukla wants to concentrate on building a translational research program in precision glaucoma care, including access to clinical trials that bring bench-to-bedside innovations to patients. "I also plan to contribute to national policy and guideline development through leadership roles in professional societies and to innovate in surgical care at the intersection of cataract and glaucoma management. Mentorship is a key priority, and I will continue to formally guide trainees and junior faculty, while establishing a robust pipeline for the development of the next generation."

Benjamin Stern

Cataract and refractive surgeon and founder of the Biomedical Optics Research Lab at Hadassah Medical Center, Jerusalem, Israel

Benjamin Stern's work focuses on ocular optics, particularly intraocular lens (IOL) design and performance. He is affiliated with the Rothschild Foundation Hospital in Paris, France, where he completed a fellowship under the mentorship of Professor Damien Gatinel. Benjamin says Gatinel is "without question, the most exceptional mentor I could have hoped for – he embodies the ideal of a scientist-surgeon: intellectually rigorous, mathematically precise, and deeply insightful."

Stern says: "When I began my internship, cataract surgery was primarily viewed as a reparative procedure – its success measured by the anatomical replacement of a cloudy crystalline lens with a clear IOL. Today, the landscape has dramatically evolved. Advances in ocular biometry, IOL power calculation formulas, and – most notably – innovative IOL designs have transformed cataract surgery into a true refractive procedure. Patients now expect not only clear vision but also freedom from glasses – and many even seek correction for presbyopia, a common age-related condition that often develops decades before cataracts. These technological advances have made it possible to restore youthful vision, which is truly remarkable."

Stern hopes to continue his work at the Anterior Segment Unit of Hadassah Medical Center under the guidance of Itay Lavy ("an outstanding cataract and cornea surgeon known for managing some of the most complex cataract cases"). With Itay Lavy, Benjamin is working on delivering the highest standard of care to their patients, "from treating inoperable cases and surgical complications to helping active individuals achieve complete spectacle independence."

Stern also continues to collaborate with Damien Gatinel, developing "scientifically robust, computer-assisted tools that will help surgeons select the optimal IOL model and power for each patient." This complex but rewarding endeavor aims to reshape global surgical standards. "In today's world of advanced IOL technologies, we can no longer rely on simplistic optical models like paraxial approximations or basic Snell's Law," says Stern. "Instead, we must integrate sophisticated principles from fields such as imaging science, aerospace engineering, and telecommunications. Stay tuned: exciting developments are on the horizon!"

Imane Tarib

Cornea, External Diseases, and Refractive Surgery Fellow at Bascom Palmer Eye Institute, US

Imane Tarib is a double-fellowship-trained ophthalmologist specializing in cornea, external diseases, and refractive surgery. Her work combines clinical excellence and innovative approaches to promote equitable access to eye care and raise awareness around corneal disease. Her dedication to global ophthalmology is focused on finding ways to advance eye donation systems in underserved communities.

Tarib told The Ophthalmologist that she is "most excited about Light Adjustable Lenses, especially for challenging cataract and refractive patients, such as those with post-laser vision correction like RK, LASIK, and PRK." Although she hasn't yet had the opportunity to use these lenses during her fellowship, she is looking forward to being able to incorporate this technology into her practice after graduation.

"One of my main goals for the next five years is to excel in providing patients with corneal disease the best refractive outcomes," she continues. "This includes effectively managing their corneal disease as well as handling their cataract surgeries, which typically involve more complex refractive planning."

In her downtime, Tarib enjoys posting social media content, and has an impressive 345K followers on Instagram, where she creates videos on all manner of ophthalmic-related subjects, such as ophthalmology education, corneal disease awareness, and empowering women in medicine. She covered the latter subject for The Ophthalmologist back in 2018, in an article unambiguously subtitled, "Wouldn't it be great to have more women recognized on The Ophthalmologist Power List?" A choice quote from the article reads: "Though gender parity is an issue across many industries, I believe that we as ophthalmologists have a prime role not only in helping people have healthy vision, but also a healthy visualization of what women can achieve in leadership roles."

Joaquín Fernández

CEO of Qvision, Medical Director of Andalusian Ophthalmology Institute at Vithas Hospitals, Spain; Executive Member of the ESCRS Council of Management Executive Secretary of the European Society of Cataract and Refractive Surgeons (ESCRS)

"In my view," Fernández says, "the most exciting development in the cataract and refractive field is the emergence of artificial intelligence as a true support tool for anterior segment surgeons. We are already seeing how AI-based platforms can integrate complex biometric data to enhance the accuracy of IOL power calculations, improving refractive precision and reducing variability in outcomes. But the most promising developments are still ahead: systems that will provide real-time surgical feedback, predictive models that anticipate complications before they occur, and technologies that continuously learn from thousands of prior procedures to deliver increasingly personalized recommendations."

He adds: "Properly integrated, AI can help us make safer, more personalized decisions grounded in real data, and, most importantly, enhance patient trust by demonstrating that we are leveraging the full spectrum of available knowledge to deliver unprecedented levels of safety and efficacy in our procedures."

Fernández believes that ophthalmology – and healthcare more broadly – is now entering a deeply transformative phase, one that calls for collective responsibility. "One of the greatest challenges we face as a scientific community, and as part of the broader ecosystem of healthcare stakeholders, is ensuring that all decisions are consistently grounded in scientific evidence," he says. "And not just any evidence, but increasingly robust and rigorous evidence that reflects the real values and needs of [our] patients. Our goal must be to generate knowledge that maximizes value-based healthcare in real-world settings, aligned with the economic sustainability of our healthcare systems."

The Evidence-Based Functional Classification of Simultaneous Vision IOLs is an example of this. Fernández explains that "in collaboration with ASCRS, we are working toward a global consensus that brings together the scientific community and industry in what is likely the most ambitious evidence-driven taxonomic effort undertaken in this field to date." The purpose is clear: to empower both patients and surgeons in the decision-making process.

Fernández concludes, "It is this shared work that is enabling real, sustainable change in how we practice, research, and lead in ophthalmology. And it is precisely this culture of commitment, structure, and shared purpose that I hope to continue strengthening in the coming years, as a legacy that inspires and supports the next generation."

ANTERIOR SEGMENT

Presbyopia Correction: Advancements in Corneal-Based Approaches

New corneal-based solutions are reshaping presbyopia care, writes Aanchal Gupta

Presbyopia remains one of the most complex and universally experienced visual challenges – an age-related decline in accommodation affecting nearly every individual over the age of 45. It arises due to the loss of elasticity and accommodative power of the crystalline lens. While the ideal solution would be to restore natural lens function, current technologies are still limited to experimental models and preclinical settings.

Currently, clinical presbyopia correction remains grounded in three main strategies: monovision, multifocality, and extended depth of focus (EDOF). Each can be achieved either at the corneal or lenticular level. However, conventional monovision can impair stereoacuity, while multifocal solutions often come with compromises in contrast sensitivity and night vision quality.

Recent advances in corneal-based presbyopia correction – particularly laser-induced aspheric profiles and biologic inlays – are providing more precise options for patients who seek functional near vision with minimal compromise to distance clarity and depth perception. These techniques employ controlled induction of spherical aberration in combination with mini-monovision, enhancing near vision while preserving quality of distance vision. This article explores some of the most notable recent innovations.

PRESBYOND Laser Blended Vision

PRESBYOND Laser Blended Vision (Carl Zeiss Meditec) offers a sophisticated corneal solution based on micro-anisometropia combined with non-linear aspheric laser ablation. This profile expands the depth of field in each eye by inducing spherical aberration – resulting in a continuous visual range from distance to near.

Both myopic and hyperopic corrections benefit: myopic treatments typically produce positive spherical aberration, while hyperopic ones induce negative values. The CRS-Master system or Refractive Workplace (Carl Zeiss Meditec AG) is used to generate the aspheric ablation profile using the spherical aberration data obtained by an aberrometer like Osiris (Costruzioni Strumenti Oftalmici). The patient's overall depth of focus is expanded by the introduction of both positive and negative spherical aberration, up to a maximum value of ±0.5 to 0.6 µm in a symmetrical trend (1). The SA combined with micro-monovision widens the overall depth of focus – often achieving up to 2.8 D of functional range across the two eyes.

Recent clinical data reinforce the efficacy and safety of PRESBYOND. A 2022 multicentre study of 139 patients (1) showed:

- Binocular UDVA better than 20/20 in over 90% of cases
- Mean binocular uncorrected near visual acuity (UNVA) of 0.1 logMAR and 0.15 logMAR for hyperopic and myopic eyes respectively
- Stable stereoacuity in 85% of patients
- High patient satisfaction, with most reporting scores above 90 on subjective vision quality assessments
- Enhancement rates remain low (~5–8%) with high refractive predictability (±0.50 D in >80% of eyes)

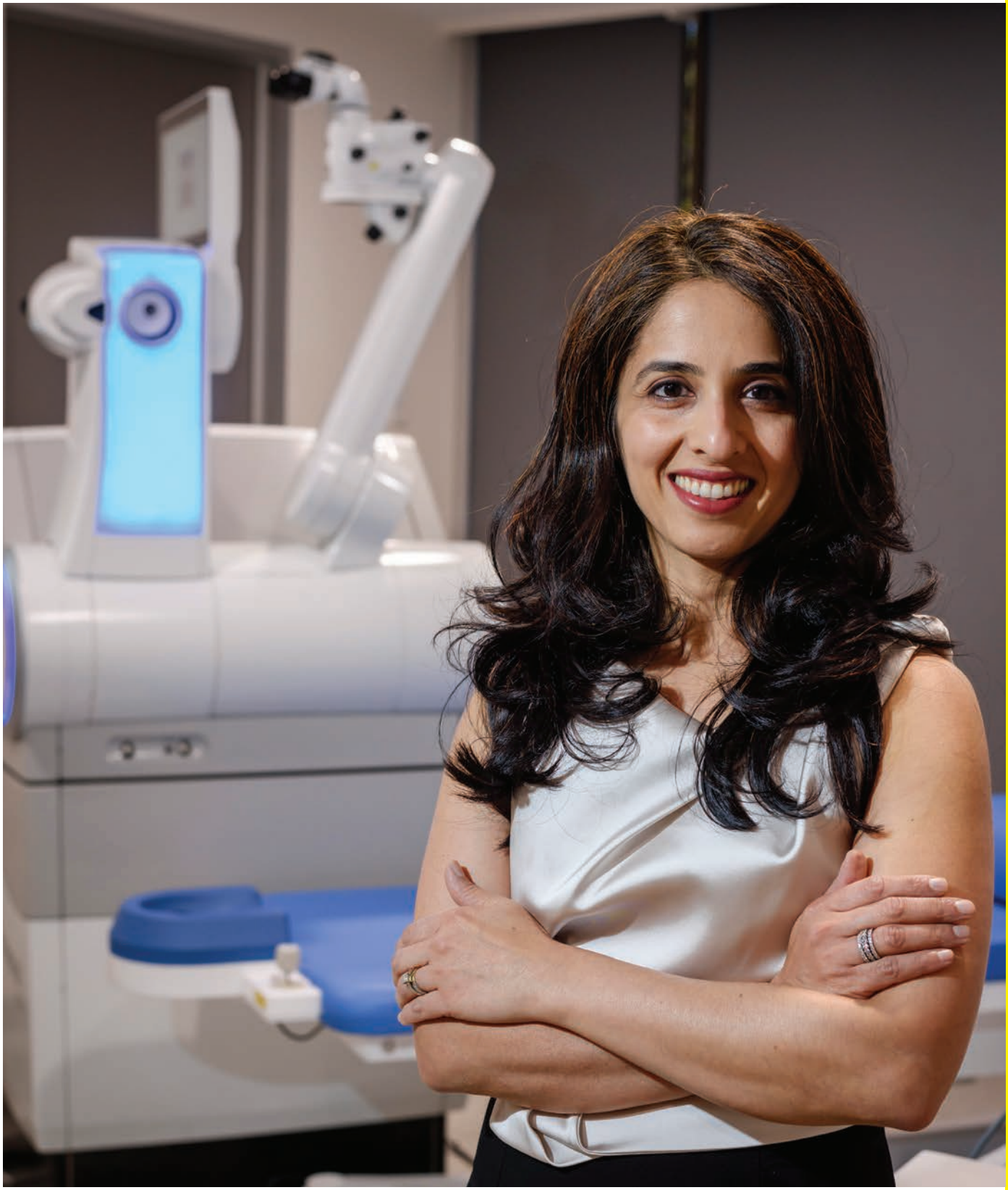
"These techniques employ controlled induction of spherical aberration in combination with mini-monovision, enhancing near vision while preserving quality of distance vision."

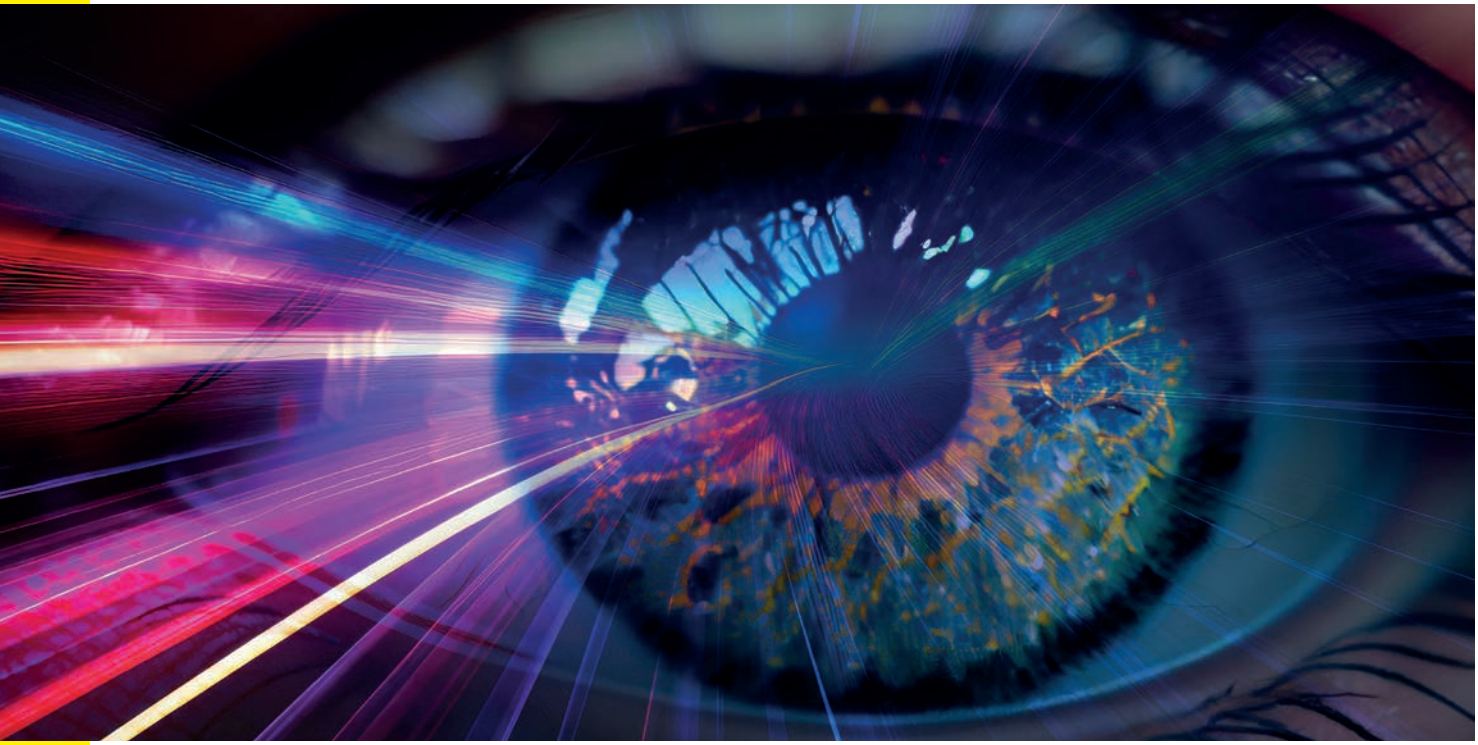
The success of PRESBYOND hinges on precise induction of spherical aberration. The procedure requires rigorous centration, accurate dominance testing, a consistent refraction protocol and whole eye aberrometry. For early presbyopes hesitant about lens surgery, PRESBYOND delivers effective, reversible presbyopia correction with excellent patient satisfaction.

PresbyMAX: Biaspheric Corneal Multifocality with Flexibility

PresbyMAX (SCHWIND eye-tech-solutions) is a bi-aspheric corneal ablation technique designed to induce multifocality by reshaping the cornea into a central hyper-positive zone for near, inducing negative spherical aberration, surrounded by a periphery optimised for distance vision. The multifocal pattern relies on wavefront-optimised technology that preserves quality of vision while enhancing depth of focus.

One of its key strengths is customization, with three core variants:





- PresbyMAX Symmetric: identical multifocal ablation in both eyes
- PresbyMAX μ-Monovision: near vision in the non-dominant eye, distance in the dominant eye, with slight anisometropia
- PresbyMAX Hybrid: a blended approach using asymmetric ablation tailored to refractive profile and dominance

In a study by Uthoff et al. (2) involving hyperopic, myopic, and emmetropic presbyopes:

- 83% achieved a UDVA of 0.1 logMAR or better
- 90% of emmetropic and 80% of hyperopic and myopic patients reached UNVA of 0.3 logMAR or better
- Some BCDVA loss was observed, especially in hyperopic eyes (10–20%), but most patients remained functionally independent from spectacles

A more recent study by Chan et al. utilising the PresbyMAX monocular approach (3) did not report any patients with a 2-line loss of BCVA. PresbyMAX is ideal for those who tolerate mild multifocality well and benefit from platform flexibility (e.g. availability on SmartSurfACE for thin corneas or surface ablation).

Custom-Q

Custom-Q ablation, as described by Damien Gatinel and others, offers a highly physiologic corneal solution by preserving and modifying the Q-value of the cornea to simulate multifocality via extended depth of focus (EDOF). The principles have been used to develop the READ correction solution recently implemented in the Alcon Wavelight EX500 laser (Alcon Laboratories, Inc.) processing software. Rather than inducing significant anisometropia or abrupt multifocal profiles, Custom-Q enhances prolaticity (negative Q) to introduce controlled negative spherical aberration in the non-dominant eye (4, 5).

The optical principle is simple yet powerful:

- There is a difference between the induced myopic error within the paraxial pupil zone and the low myopic to emmetropic paracentral zone.
- Reducing the myopic refractive error toward the pupil edge aims to provide the eye with better-uncorrected distance visual acuity.
- "This gradient of defocus from the centre to the edge of the pupil is reflected in the induction of negative spherical aberration". 4

In practical terms:

- Surgeons typically correct the non-dominant eye to –0.75 D to –1.50 D
- The Q-value is modified toward –0.6 to –0.7, inducing about –0.4 μm of negative spherical aberration (6 mm pupil)
- Pupil size and dynamics are critical—this technique works on the principle that there is pupillary miosis during accommodation

Custom-Q offers a low-aberration, low-disruption option – especially valuable in early hyperopic presbyopes, in combination with monovision. Courtin et al (5) reported,

- Near vision: At six months, 83% of patients achieved Jaeger 3 (Parinaud 4) or better binocular uncorrected near visual acuity (UNVA).
- Distance vision: 91% achieved 20/20 or better binocular uncorrected distance visual acuity (UDVA), with a mean binocular UDVA of 0.01 ± 0.04 logMAR.

Supracor

SUPRACOR (Technolas Perfect Vision) employs an aberration-optimized laser algorithm to reshape the central 3.0 mm of the cornea, creating a hyperpositive zone that adds approximately +2.00 D for near vision. It can be used bilaterally with a mild myopic target of -0.50 D or in a micro-monovision approach with plano in the dominant eye. By minimizing surgically induced aberrations, SUPRACOR aims to enhance near vision while maintaining distance quality. Clinical results show 87%–91% of patients achieve N8 or better uncorrected near visual acuity, though 6%–10% may lose two or more lines of corrected distance visual acuity (CDVA) (6).

Allotex Inlays

Allotex® is a biocompatible, allogenic corneal inlay derived from processed donor corneal stroma. The implant is shaped into a thin (20 µm), dome-shaped lenticule, designed to be inserted under a LASIK flap or within a corneal pocket in the non-dominant eye. Its mode of action is tissue addition, subtly modifying central curvature and inducing a controlled amount of 4th and 6th order aberrations to enhance EDOF.

Clinical evidence shows:

- Improvement from J6 to J2 in UNVA with 88% near spectacle independence at 3 years
- No cases of haze, rejection, or explantation
- Preservation of UDVA in most patients
- A 2.8 D usable depth of focus—comparable to EDOF IOLs (7, 8)

What makes Allotex unique is its tissue-based design offering an additive solution. Unlike synthetic inlays, which have historically been associated with complications like haze or foreign body reaction, Allotex uses a biologic, transparent collagen matrix that integrates naturally into the corneal stroma but is also reversible.

Performing Australia's first Allotex implantation at IVISION LASER was a milestone, and I have seen first-hand patients experiencing near vision improvement within a day, with distance vision optimising over subsequent months with epithelial remodelling.

Conclusions: A Layered and Personalised Approach

Presbyopia correction is no longer a binary choice between reading glasses or multifocal IOLs. With modern corneal-based solutions, refractive surgeons now have a toolbox of tailored strategies to address different patient needs, refractive profiles, and lifestyle demands.

In my practice, corneal-based presbyopia treatments, such as PresbyMAX and Allotex, serve as a valuable option for early presbyopes, 45 to 55 years old – particularly those with some residual accommodation – who are seeking improved near vision without the invasiveness of intraocular surgery. The key shift is in the preservation of distance acuity and stereopsis compared to traditional monovision.

Laser-based solutions provide the precision and predictability we associate with laser vision correction with high patient satisfaction. The choice of technology is affected by laser platform availability, which influences both patient selection and surgical planning. In this patient group, attention is required towards ocular surface optimization and dry eye management. As with all presbyopia interventions, thorough preoperative counselling remains essential to align outcomes with patient expectations.

These innovations reflect a broader shift in refractive surgery – from singular, one-size-fits-all procedures toward a layered and personalised model of vision correction. It signals a future where presbyopia management is not just corrective, but strategically bespoke.

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GLAUCOMA

Guiding Glaucoma

Constance Okeke discusses a potential IOP-lowering alternative treatment for glaucoma patients

At AAO 2024 last year, glaucoma and cataract specialist Constance Okeke presented her poster, "Reduction in IOP after switching to latanoprostene bunod in glaucoma patients in real-world clinical practice." The study examined IRIS registry data to evaluate the efficacy of latanoprostene bunod (LBN) treatment – Vyzulta – in glaucoma patients in real-world clinical practice. The Ophthalmologist caught up with Okeke to learn more about what LBN might mean for future glaucoma treatments.

What were the key findings of your study?

We were evaluating IOP (intraocular pressure) reduction in patients who had glaucoma or ocular hypertension (OHT) and had been switched to latanoprostene bunod. We began by looking at patients who had open-angle glaucoma and OHT – this was about 4.2 million people, which we whittled down to 833 patients who had been on some kind of glaucoma therapy then switched to LBN. We were able to subdivide this group into two main cohorts – patients who were on a previous prostaglandin analog (PGA) monotherapy (the largest cohort) and those that were on a non-PGA combination therapy before switching to monotherapy LBN (a smaller but still substantial cohort).

For these patients, the mean IOP at baseline was 19.5 and in follow up the mean change in IOP decreased significantly by 2.8 mmHg. We saw on the follow-up visit that around 60 percent of patients in the overall group had at least a 2mm Hg mercury reduction of IOP, and nearly 30 percent of the patients had at least 5mm Hg of mercury reduction. So there was a significant amount of reduction in eye pressure when these patients switched to LBN. In addition, the subgroup that was switched from a non-PGA combination therapy to LBN monotherapy were found to have a slightly higher reduction in mean change in IOP and a higher percentage of patients who dropped by 5 mmHg or more. This is a significant win in both efficacy and enhanced compliance for the patient.

Interestingly, this information supported previous research we'd undertaken, a multi-center retrospective chart review looking at PGA monotherapy patients who had been switched to LBN. In that study, we found that there was around a 25 percent reduction in IOP on two subsequent follow-up visits for this cohort, with a significant IOP reduction that was very similar to the findings we presented at AAO.

How do you see LBN fitting into the evolving glaucoma treatment landscape?

I'm a big adopter of the whole interventional mindset, being more proactive and action-oriented. But as I discuss this paradigm shift with other thought leaders in the field, I realize that medication is not necessarily going anywhere, because it is part of the beginning, the middle, and the end of the treatment process. There will always be an avenue for medication because sometimes the procedures won't give us what we need, and then we lean towards medicine.

What other emerging trends in glaucoma treatment are you excited about?

Being aligned with the interventional mindset, I was a very early adopter of SLT and MIGS. I've already used direct selective laser trabeculoplasty (DSLT) on a number of patients, and this fits nicely into the concept of "treatment first." The experience is faster and simpler for patients in terms of recovery; you don't have to use a gonioprism, for example, directly on the eyes. You can be very efficient, but the skillset is also simplified. If you are new to SLT, or maybe concerned about knowing the detail of the angle, DSLT takes a lot of that technical skill out of the equation, and thus lends itself to a broader range of adoption.

There are also different mechanisms of action. I was a Cypass user, and so was disappointed when it was withdrawn from use in the US in 2018. There's an upcoming device called CycloPen with AlloFlo, which has been developed by a company called Iantrek. They have devised a way to use scleral tissue to create a cyclodialysis that can help with the increase in uveoscleral outflow and lowering of eye pressure.

Is there anything else you'd like to add?

One of the passions I have is educating people, and understanding that when they have the knowledge, they have power. When they have the power to understand something, they can be open to utilizing it. With this in mind, I created the iGlaucoma YouTube channel that has a series called "MIGS Made Clear." The purpose of the series was to do just that – to help break down MIGS in a way that's systematic, very visual and clear. It's been very well received by both the medical and optometry world. I believe when there is comfort with advancing technology, then it's easier to embrace it in practice.

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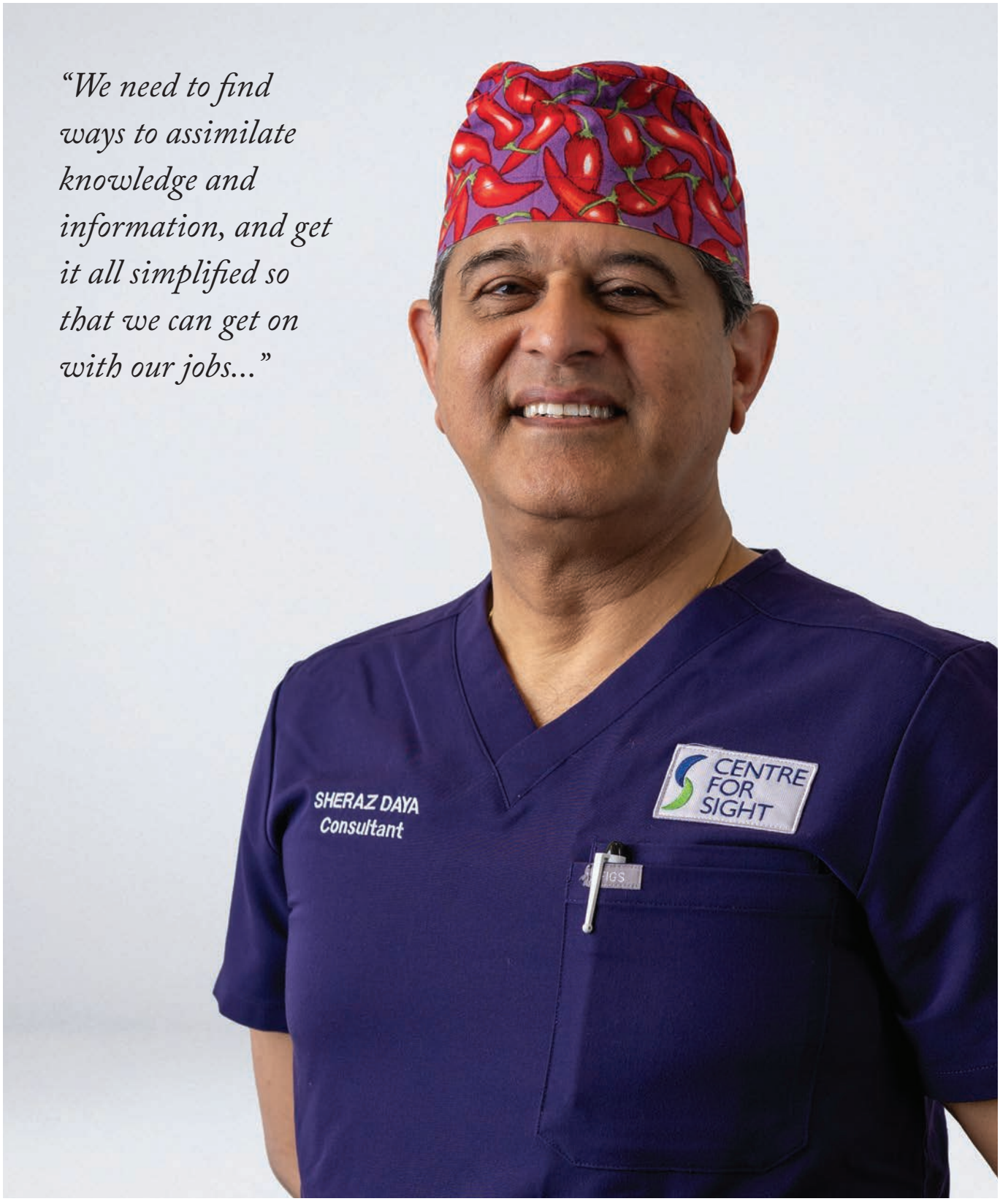
We look forward to the exciting opportunities ahead as we continue to lead the way in vision care innovation. Stay tuned for more updates as we embark on this new chapter together!

"We need to find ways to assimilate knowledge and information, and get it all simplified so that we can get on with our jobs..."



A Template of Excellence

Sitting Down With… Sheraz Daya, Medical Director of Centre for Sight and Chief Medical Editor for Cataract & Refractive Surgery Today Europe

What first interested you in ophthalmology?

When I was at school in India, I remember seeing a black-and-white program on TV of a cornea transplant. I had never considered being a doctor before, but after seeing the transplant I thought it was amazing that they could even do that.

Then later on, I was in medical school in Ireland and following the herd – all the macho guys wanted to do general surgery or orthopedics, and so I was falling into that line. But we went to The Mater Hospital in Dublin, where Professor Peter Eustace invited us to watch his private surgery. It wasn't even a closed operating theater – it was in the library, but with vinyl on the floor and music playing in the background, and the surgeons were sitting down doing surgery. I just couldn't believe it… Eustace was using silk to close up a huge corneal wound, and he was also putting an implant in the eye. And the rule was, if you saw surgery with Eustace then you had to visit the patient the next day with him too. So the following morning we were back at the hospital. Professor Eustace took the patch off the patient's eyes, and just the look on the patient's face was priceless… I was sold. I thought, "This is what I want to do with my life."

Were there specific mentors that influenced your career?

Strangely enough, it turns out that the surgeon I had seen on my black-and-white television was David Paton, the founder of Orbis, and in a curious twist of fate he became like my dad in ophthalmology.

After Ireland I went to the US, but I couldn't get into ophthalmology at the time, and so I did internal medicine there instead. While doing that, I worked with people like Bob Rich, a glaucoma specialist, and Mark Kupersmith, a neuro-ophthalmologist at New York University. Then I applied to get into ophthalmology, and was interviewed at the Catholic Medical Center in Brooklyn & Queens where David Paton was. I couldn't believe he was in this dump of a place, but he wanted to work in an impoverished area and set up systems for people who desperately needed care, and it turns out he wanted somebody like me, and I was accepted into the program.

It was fantastic, and I learned a lot working in Brooklyn & Queens. David Paton actually coined the term "human templates of excellence" – which basically means you find templates of excellence, and you imprint on them, and then you move on and find another template of excellence. You take the best out of all the people that you meet.

There are many other mentors prior to that that influenced me, but David Paton was the most impactful mentor I had, and definitely had the biggest impact on my career.

What kind of advances have you seen throughout your career?

I feel quite privileged because I've seen the whole gamut of change. When I was a fellow in 1991, refractive surgery was mainly radial keratotomy (RK). We were doing some trials on the excimer laser, but back then it was a bunch of computers, a box, and a microscope. I learned how to do RK when I practicing in New York City, but I was using a blade because there were no lasers! Then, coming back to the UK was fantastic because there were lasers available, and I did the first commercial LASIK operation in the UK in 1994.

From there, femtosecond lasers came along, and we now have better and better lasers. Excimer lasers are like little aircraft now – they've got black boxes in them, every pulse that's delivered is measured and readjusted for the next one, and you can trace where all the pulses go on a cornea. They're much faster – they go at 20 times the speed of the original lasers – and it's a totally different ball game.

Can you share with us a highlight of your career?

One of the things I am most proud of – and it is probably our most cited article as well – is our work on limbal stem cell transplantation. When I was at the Queen Victoria Hospital in East Grinstead, UK, I was fortunate enough to have the Blond McIndoe Research Foundation housed within the organization, and they were very good at cell culture. I was interested in doing epithelial cell culture and stem cell culture, and we managed to get ethics approval and demonstrated proof of concept that we could culture, and then we took these cells manufactured in the lab and transplanted them into patients. In 1999, this was quite a dramatic event, in terms of what it did for patients' eyes.

What are your main interests within ophthalmology right now?

Working to streamline what we do. We need to find ways to assimilate knowledge and information, and get it all simplified so that we can get on with our jobs. In the UK we have a problem with burnout. There's just a huge amount of work that needs to be done, in terms of compliance, and on top of that, seeing patients and then trying to feed all sorts of streams of information to them. As a surgeon there's bound to be gaps in your knowledge, but all those gaps can be filled in using AI. And then we can concentrate on getting on with the job and doing what's absolutely best for our patients.

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REFERENCE

1. Glaukos Data on File.

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INDICATION FOR USE. The iStent infinite® Trabecular Micro-Bypass System Model iS3 is an implantable device intended to reduce the intraocular pressure (IOP) of the eye. It is indicated for use in adult patients with primary open-angle glaucoma in whom previous medical and surgical treatment has failed. **CONTRAINDICATIONS.** The iStent infinite is contraindicated in eyes with angle-closure glaucoma where the angle has not been surgically opened, acute traumatic, malignant, active uveitic, or active neovascular glaucoma, discernible congenital anomalies of the anterior chamber (AC) angle, retrobulbar tumor, thyroid eye disease, or Sturge-Weber Syndrome or any other type of condition that may cause elevated episcleral venous pressure. **WARNINGS.** Gonioscopy should be performed prior to surgery to exclude congenital anomalies of the angle, PAS, rubeosis, or conditions that would prohibit adequate visualization that could lead to improper placement of the stent and pose a hazard. **MRI INFORMATION.** The iStent infinite is MR-Conditional, i.e., the device is safe for use in a specified MR environment under specified conditions; please see Directions for Use (DFU) label for details. **PRECAUTIONS.** The surgeon should monitor the patient postoperatively for proper maintenance of IOP. Three out of 61 participants (4.9%) in the pivotal clinical trial were phakic. Therefore, there is insufficient evidence to determine whether the clinical performance of the device may be different in those who are phakic versus in those who are pseudophakic. **ADVERSE EVENTS.** The most common postoperative adverse events reported in the iStent infinite pivotal trial included IOP increase ≥ 10 mmHg vs. baseline IOP (8.2%), loss of BSCVA ≥ 2 lines (11.5%), ocular surface disease (11.5%), perioperative inflammation (6.6%) and visual field loss ≥ 2.5 dB (6.6%). **CAUTION:** Federal law restricts this device to sale by, or on the order of, a physician. Please see DFU for a complete list of contraindications, warnings, precautions, and adverse events.

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