



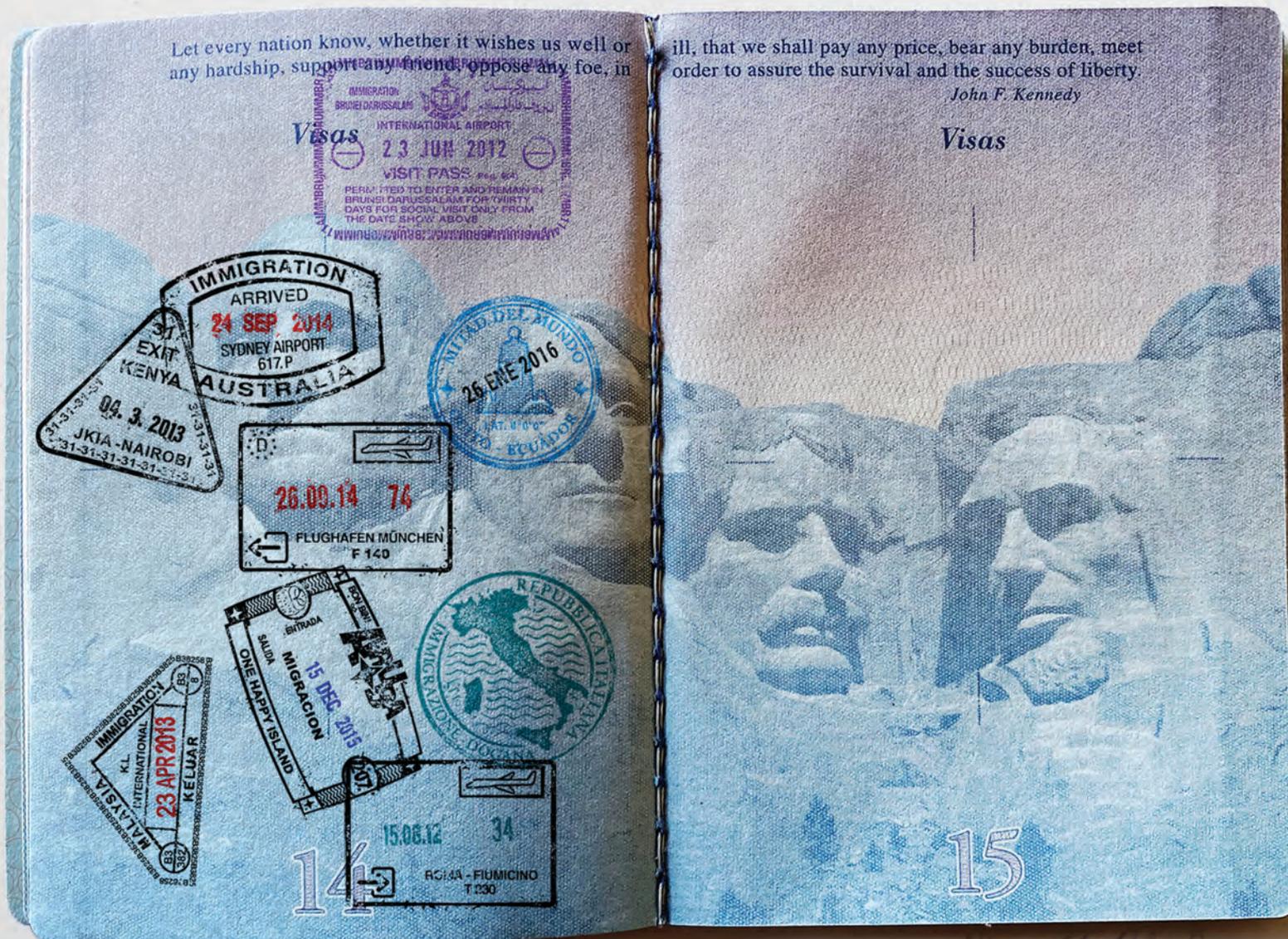
AMERICAN ACADEMY
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AAO 2021 EyeNet News

SUBSPECIALTY DAY EDITION
NEW ORLEANS

**Don't Miss the
Insiders' Guide to
Subspecialty Day**

**AAO
2021**



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 MUCH MORE TO SEE

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INDICATIONS FOR USE: The Hydrus Microstent is indicated for use in conjunction with cataract surgery for the reduction of intraocular pressure (IOP) in adult patients with mild to moderate primary open-angle glaucoma (POAG). **CONTRAINDICATIONS:** The Hydrus Microstent is contraindicated under the following circumstances or conditions: (1) In eyes with angle closure glaucoma; and (2) In eyes with traumatic, malignant, uveitic, or neovascular glaucoma or discernible congenital anomalies of the anterior chamber (AC) angle. **WARNINGS:** Clear media for adequate visualization is required. Conditions such as corneal haze, corneal opacity or other conditions may inhibit gonioscopic view of the intended implant location. Gonioscopy should be performed prior to surgery to exclude congenital anomalies of the angle, peripheral anterior synechiae (PAS), angle closure, rubeosis and any other angle abnormalities that could lead to improper placement of the stent and pose a hazard. **PRECAUTIONS:** The surgeon should monitor the patient postoperatively for proper maintenance of intraocular pressure. The safety and effectiveness of the Hydrus Microstent has not been established as an alternative to the primary treatment of glaucoma with medications, in patients 21 years or younger, eyes with significant prior trauma, eyes with abnormal anterior segment, eyes with chronic inflammation, eyes with glaucoma associated with vascular disorders, eyes with preexisting pseudophakia, eyes with uveitic glaucoma, eyes with pseudoexfoliative or pigmentary glaucoma, eyes with other secondary open angle glaucoma, eyes that have undergone prior incisional glaucoma surgery or cilioablative procedures, eyes that have undergone argon laser trabeculoplasty (ALT), eyes with unmedicated IOP < 22 mm Hg or > 34 mm Hg, eyes with medicated IOP > 31 mm Hg, eyes requiring > 4 ocular hypotensive medications prior to surgery, in the setting of complicated cataract surgery with iatrogenic injury to the anterior or posterior segment and when implantation is without concomitant cataract surgery with IOL implantation. The safety and effectiveness of use of more than a single Hydrus Microstent has not been established. **ADVERSE EVENTS:** Common post-operative adverse events reported in the randomized pivotal trial included partial or complete device obstruction (7.3%); worsening in visual field MD by > 2.5 dB compared with preoperative (4.3% vs 5.3% for cataract surgery alone); device malposition (1.4%); and BCVA loss of ≥ 2 ETDRS lines ≥ 3 months (1.4% vs 1.6% for cataract surgery alone). For additional adverse event information, please refer to the Instructions for Use. **MRI INFORMATION:** The Hydrus Microstent is MR-Conditional meaning that the device is safe for use in a specified MR environment under specified conditions. **Please see the Instructions for Use for complete product information.**

References:

1. Ahmed, I.K. (2021, Mar, 4-7). 5 Year Follow Up from the HORIZON Trial. American Glaucoma Society Virtual Annual Meeting.

*Data on file—includes trabeculectomy and tube shunt.

- 6-10 **What's Hot at Subspecialty Day**
Program directors preview selected highlights.
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From the Editor

Welcome to Subspecialty Day 2021

This year's Subspecialty Day lineup includes glaucoma, neuro-ophthalmology, pediatric ophthalmology, and refractive surgery on Friday. On Saturday, there will be Subspecialty Day meetings in cornea and oculofacial plastic surgery. As always, Retina Subspecialty Day is scheduled for both Friday and Saturday. I urge you to take time to explore disciplines other than your own (now easier to do because of live streaming). See the previews (pages 6-10) to find topics that might interest you.



New this year: The Opening Session is on Friday evening. Don't miss the kickoff festivities, the Academy awards ceremony, and the Jackson Memorial Lecture by Russ Van Gelder.

It takes place 5:00-6:30 p.m., in The Great Hall. For more meeting tips, look for the second edition of *AAO 2021 News* on Sunday and check your email each evening for *AAO 2021 Daily*, a roundup of news from Subspecialty Day and AAO 2021. The e-newsletter content can also be found at aao.org/eyenet/daily.

Ruth D. Williams, MD
Chief Medical Editor, *EyeNet Magazine*

Note: Program information was accurate at time of press. For updates, check aao.org/mobile.



On the Cover Snowflake

Photo by Katelyn Olney, CRA, OCT-C
University of Rochester
Flaum Eye Institute
Rochester, New York



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[aao.org/eyenet/
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for updated program
information.

SATURDAY, NOV. 13

First-Line Treatment in Diabetic Retinopathy and Diabetic Macular Edema: A Patient Case-Based Approach

Speaker: Nathan Steinle, MD

*Presented by Regeneron
Pharmaceuticals and designed
for US retina specialists.*

SUNDAY, NOV. 14

Navigating Dry Eye Disease: An Audience-Activated Adventure

Speaker: Jay K Mattheis, MD, MSPH,
FACS—Director, Peer Education for
Novartis - US Ophthalmics

*Dr. Mattheis is an employee of
Novartis. Presented by Novartis
Pharmaceuticals Corporation and
designed for US eye care specialists.*

**Ernest N. Morial
Convention Center**
Room R02-05, 2nd Floor

**Check-in and
Lunch Pickup**
12:15-12:45 p.m.
Lunches are provided on
a first-come basis.

Program
12:45-1:45 p.m.

MONDAY, NOV. 15

A Difference in Drug Delivery

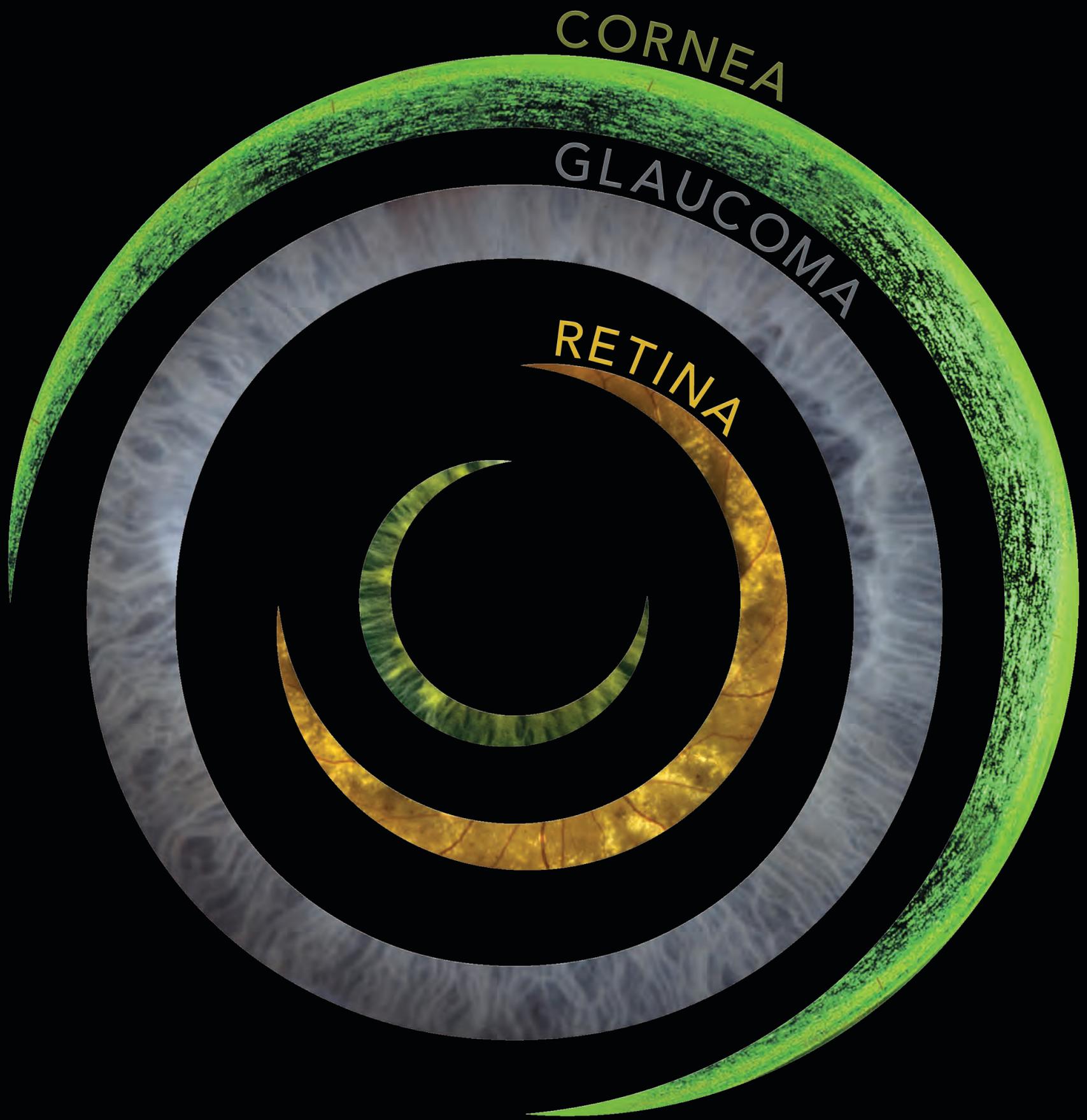
Speakers: Ike Ahmed, MD
(moderator), Oluwatosin Smith, MD,
and Savak Teymoorian, MD

*Presented by Allergan, an AbbVie
Company and designed
for US ophthalmologists.*

These programs are non-CME and are developed independently by industry. They are not affiliated with the official program of AAO 2021 or Subspecialty Day. By attending a lunch, you may be subject to reporting under the Open Payments Program (Sunshine Act). Also, by attending a lunch, you consent to share your contact data, inclusive of National Provider ID, with the corporate partner.

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NOTICE: This publication was printed in advance of Subspecialty Day and AAO 2021. For the most up-to-date information, check the Program Search (aao.org/programsearch) or the Mobile Meeting Guide (aao.org/mobile). American Academy of Ophthalmic Executives®, EyeNet®, EyeSmart™, IRIS® Registry, ONE®, and Preferred Practice Patterns™ are trademarks of the American Academy of Ophthalmology®. All other trademarks are the property of their respective owners. © 2021 American Academy of Ophthalmology.



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Program Directors Share Insights on Subspecialty Day From Cornea to Retina

To provide an inside look at Subspecialty Day, *EyeNet* contacted the program directors from each meeting and asked the following questions: 1) Which presentation will have broad appeal across subspecialties? 2) Which presentation might cause subspecialists to reconsider an area of their clinical practice? 3) Which presentation addresses particularly novel or exciting developments within the field? Here are those answers, accompanied by descriptions directly from the program directors.

Most Subspecialty Day meetings are held on Friday. However, the Cornea and the Oculofacial Plastic Surgery Subspecialty Day meetings take place on Saturday only. As always, Retina Subspecialty Day is scheduled for both Friday and Saturday.

Note: All summaries were written in advance of Subspecialty Day. Be sure to check the Subspecialty Day schedule in the Mobile Meeting Guide, accessible at aao.org/mobile, for the most up-to-date information.

Of Interest Across Subspecialties

CORNEA

La Nouvelle Orleans AB

Cataract Surgery Considerations in Abnormal Corneas, presented by Kristin M. Hammersmith, MD (Saturday, 11:24-11:32 a.m.)

Fight the Blight With Light—Lasers for Blepharitis, presented by Vanitee Y. Bunya, MD (Saturday, 2:35-2:43 p.m.)

Two presentations during Cornea Subspecialty Day may be of particular interest across subspecialties.

Patients with corneal abnormalities presenting with cataract can pose a challenge even to experienced anterior segment surgeons. Structural abnormalities of the cornea, such as thinning, scarring, and ectasia, can make cataract surgery complex. Kristin M. Hammersmith, MD, will present accurate lens calculations, management of intraocular complications, and postoperative management in the setting of abnormal corneas.

Dry eye and blepharitis are challenging for all ophthalmologists. These patients take up considerable chair time, and the situation can be frustrating for both the patient and the physician. There is also increasing evidence that ocular surface disease can affect the outcome of cataract surgery, especially in the setting of multifocal lenses, and can cause considerable dissatisfaction after otherwise pristine

surgery. Beyond conservative therapy, lasers can be a useful adjunct for ophthalmologists in treating these ocular conditions. However, the wide variety of lasers and devices available to treat blepharitis can be overwhelming. Vanitee Y. Bunya, MD, will discuss the various current therapies for ocular surface disease and how to select the right one for each patient.

—Sophie X. Deng, MD, PhD,
Vishal Jhanji MD, and Sonal S. Tuli, MD
Cornea program directors

GLAUCOMA

La Nouvelle Orleans AB

Lens and Glaucoma, moderated by Christine Larsen, MD, and Teresa Chen, MD (Friday, 3:07-3:57 p.m.)

This session will provide a multispecialty perspective on how glaucoma can be caused by the native crystalline lens, aphakia, an anterior chamber IOL, a posterior chamber IOL, or a displaced lens. In addition to providing a refresher on the myriad ways in which the lens can be associated with glaucoma, this session will focus on best treatment strategies for glaucoma patients with real and artificial lenses of all shapes and sizes. Join us in this session, which will provide a forum for general ophthalmologists, glaucoma specialists, cornea specialists, and retina specialists alike to improve their knowledge about specific topics such as premium and toric lenses for glaucoma patients, solutions for uveitis-glaucoma-hyphema (UGH) syndrome, issues with aphakic glaucoma, narrow angles and phacoemulsification surgery, combined phaco plus glaucoma procedures, and much, much more.

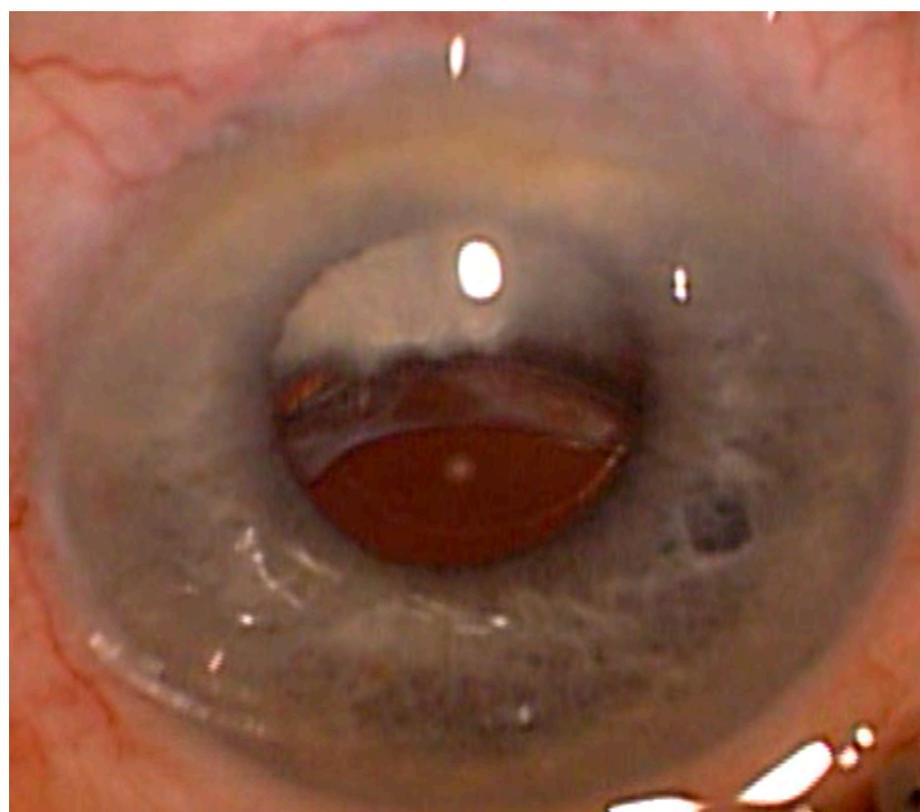
—Brian A. Francis, MD, and
Kelly W. Muir, MD
Glaucoma program directors

NEURO-OPHTHALMOLOGY

La Nouvelle Orleans C

Double Vision: I Can't See Straight! Diplopia, moderated by Madhura Tamhankar, MD, and Jason Peragallo, MD (Friday, 8:02-10:05 a.m.)

All ophthalmologists encounter patients who have double vision. The differential diagnosis for this symptom ranges from common non-neuro-ophthalmic conditions such as dry eye and cataract that produce monocular diplopia to potentially life-threatening disorders like aneurysmal cranial nerve palsy. Patients describe their visual symptoms in a variety of ways, and the concept and perception



GLAUCOMA. The Glaucoma Subspecialty Day includes discussion of how the lens can be associated with glaucoma.

of “double vision” varies across ages and even regions of the country and world. The session will engage the audience with several cases in which the initial symptoms alone can lead down several diagnostic and therapeutic pathways. New this year is a focus on common complaints that can cause consternation and confusion about how extensive the diagnostic workup should be and what the best treatment and mitigation strategies are. Our speakers and expert panelists will help the ophthalmologist identify these problems and direct the diagnosis and management in the most efficient and effective way. Come to this session and learn more!

—Peter A. Quiros, MD, and
Prem S. Subramanian, MD, PhD
Neuro-Ophthalmology program directors

OCULOFACIAL PLASTIC SURGERY

Room 243

Trending, moderated by Cat Burkat, MD, FACS (Saturday, 3:12-4:07 p.m.)

This session on trending topics is not to be missed by comprehensive ophthalmologists, cornea specialists, or oculofacial plastic surgeons. Michael Yen, MD, will begin the session with the orbital approach to managing the neurotrophic cornea, and then Alon Kahana, MD, PhD, will discuss how best to introduce

corneal neurotization to your practice by “Breaking the Barriers” to start performing these procedures. Elizabeth Bradley, MD, will discuss management of facial nerve palsy, specifically the lower eyelid aspects. Finally, Mark Lucarelli, MD, will discuss the treatment of synkinesis with toxins.

—Catherine J. Hwang, MD, and
Thomas E. Johnson, MD
Oculofacial Plastic Surgery
program directors

PEDIATRIC OPHTHALMOLOGY

Room 243

Childhood Glaucoma—New Approaches to an Enduring Foe, moderated by Deborah K. VanderVeen, MD (Friday, 1:15-2:15 p.m.)

Medical and surgical management of childhood glaucoma has evolved rapidly during recent years, but dissemination of these advances in pediatric glaucoma care has been slower. If you see children in your practice, this session will be of interest because it reviews state-of-the-art management of childhood glaucoma.

Faculty of the Pediatric Ophthalmology Subspecialty Day program will discuss key topics in this area. The session will include talks on interpretation of OCT for management of childhood glaucoma, microinvasive glaucoma surgery, and consideration of various types of angle



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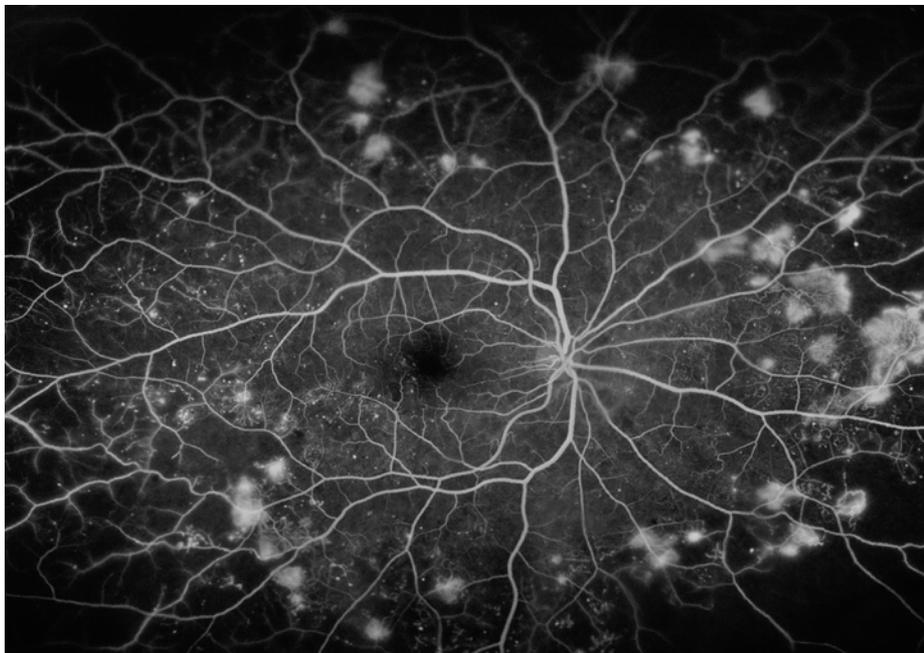
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RETINA. The use of anti-VEGF therapy for the management of proliferative diabetic retinopathy has increased since publication of Protocol S.

surgery, including goniotomy, circumferential Schlemm canal surgery, trabeculectomy, and glaucoma drainage devices in the treatment of childhood glaucoma.

—Gena Heidary, MD, PhD, and
David K. Wallace, MD, MPH
Pediatric Ophthalmology
program directors

REFRACTIVE SURGERY

New Orleans Theater AB

“Tis the Times” Plague, presented by Ronald D. Gerste, MD (Friday, 8:23-8:33 a.m.)

The general public’s perception of medicine and medical progress is shaped by diseases and the quest to cure them. Diseases that have both fascinated and frightened people for generations include infections, cancer, heart disease, diabetes, and neurodegenerative ailments like Lou Gehrig’s disease.

However, there is a dysfunction of a major organ that afflicts not just millions, or even hundreds of millions, but billions of people—in fact, the majority of human beings. Refractive errors are a major burden on the daily lives of individuals, as well as on national economies, around the world. The number of people who are blind or have severe vision loss due to uncorrected refractive error does not create headlines, but it surpasses all other eye diseases. As gigantic as this challenge is, so are the chances for ophthalmology and ophthalmic surgery, now and even more in the future, to become a positively life-altering presence for people all around the world.

—Burkhard Dick, MD, and
Deepinder K. Dhaliwal, MD
Refractive Surgery program directors

RETINA

The Great Hall

Developing a Pancoronavirus Vaccine, presented by Lbachir BenMohamed,

PhD (Friday, 9:12-9:18 a.m.)

Genetic variants of SARS-CoV-2 have been emerging and circulating widely around the world throughout the COVID-19 pandemic. Given the concern over variants that demonstrate greater transmissibility, cause more serious disease, or show greater resistance to currently available vaccines, there is enormous interest in developing vaccines that can target all SARS-CoV-2 variants as well as other coronaviruses, such as those that cause the common cold. Lbachir BenMohamed, PhD, a herpes virologist, will discuss the efforts by his laboratory and other scientists to develop effective pancoronavirus vaccines, which would be of enormous public health importance across the globe. This fascinating highlight presentation will be of interest to physicians of all specialties and subspecialties.

—Mark W. Johnson, MD, and
Srinivas R. Sadda, MD
Retina program directors

CLINICAL PRACTICES TO RECONSIDER

CORNEA

La Nouvelle Orleans AB

Keratoplasty: Layer by Layer, moderated by Vishal Jhanji, MD, FRCOphth (Saturday, 9:08-10:07 a.m.)

Endothelial keratoplasty has gained rapid popularity among cornea surgeons worldwide and has emerged as the treatment of choice for the management of patients with corneal endothelial dystrophy. This session features three presentations on endothelial keratoplasty. While the focus is on current techniques and outcomes in complex eyes, the talks also feature intriguing newer techniques of endothelial keratoplasty. The concept of customized endothelial keratoplasty will be

complemented by discussion of medical treatment for endothelial dysfunction with the use of Rho-kinase inhibitors and cell therapy.

—Sophie X. Deng, MD, PhD,
Vishal Jhanji MD, and Sonal S. Tuli, MD
Cornea program directors

GLAUCOMA

La Nouvelle Orleans AB

Glaucoma in the Digital Age, moderated by Babak Eliassi-Rad, MD, and Ian Conner, MD, PhD (Friday, 1:05-1:55 p.m.)

This session will present and discuss several tools that are gaining popularity, as they facilitate earlier and more reliable glaucoma diagnosis and treatment. They include home tonometry, which makes it possible to obtain intraocular pressure (IOP) measurements on different days and at different times of day. Currently, ophthalmologists may be obtaining a patient’s visual fields only once a year; however, with virtual reality visual fields, testing can be performed several times a year to identify progression earlier and start or escalate treatment sooner. Because of the pandemic, use of telemedicine has gained popularity, and this type of care can be very beneficial to the glaucoma patient and to the ophthalmologist’s practice. Other topics in this presentation include the use of artificial intelligence in glaucoma management and new visual aid apps that can improve the quality of life for glaucoma patients. We believe that the topics covered in this session will be beneficial for today’s ophthalmologists and will become part of ophthalmology practice in the near future.

—Brian A. Francis, MD, and
Kelly W. Muir, MD
Glaucoma program directors

NEURO-OPHTHALMOLOGY

La Nouvelle Orleans C

More Than Meets the Eye! Systemic Disease Manifestations, moderated by Chantal Boisvert, MD, and Guy Jirawuthiworavong, MD (Friday, 1:18-3:30 p.m.)

Neuro-ophthalmologists in particular and ophthalmologists in general are often faced with transient visual complaints that have few or no findings on examination and mixed or incomplete results from diagnostic testing. In this session we focus on characterizing the nature of the vision loss, assessing urgency, and targeting diagnostics, using an evidence-based approach. In addition, we will focus specifically on how to deal with test results that are at odds with the clinical exam and history. Among the questions: Is my patient having a transient ischemic attack? Is this MRI truly normal? The carotids are normal; now what? Join us for the “More Than Meets the Eye!” session at Neuro-Ophthalmol-

ogy Subspecialty Day, where you will participate in case discussions centered around such dilemmas.

—Peter A. Quiros, MD, and
Prem S. Subramanian, MD, PhD
Neuro-Ophthalmology program directors

OCULOFACIAL PLASTIC SURGERY

Room 243

Face Forward—Practice Perfect, moderated by Catherine J. Hwang, MD, FACS (Saturday, 8:05-9:05 a.m.)

We all strive to improve our practices each day. This session focuses on a variety of topics that will help oculofacial plastic surgeons as well as comprehensive ophthalmologists expand their practices. Topics include building a social media presence, by Andrea Tooley, MD; adding skin care to your practice, by Tanuj Nakra, MD; and practical lasers for your practice, by Julie Woodward, MD. Finally, the topic of physician extenders in your practice will also be discussed by all panelists.

—Catherine J. Hwang, MD, and
Thomas E. Johnson, MD
Oculofacial Plastic Surgery
program directors

PEDIATRIC OPHTHALMOLOGY

Room 243

Reimagining Clinical Practice, moderated by Gil Binenbaum, MD, and David G. Morrison, MD (Friday, 9:35-11:05 a.m.)

Pediatric ophthalmologists and comprehensive ophthalmologists have seen a tremendous upheaval in clinical practice due to the COVID-19 pandemic. Clinicians have sought to become resourceful in conducting eye examinations remotely, utilizing current technology to provide continued access to care, and maintaining practice solvency during this difficult time.

Faculty of the Pediatric Ophthalmology Subspecialty Day program will share their expertise and insight on home vision apps, solutions for accessing clinical care, and consideration of billing guidelines. Practicing ophthalmologists will complete the session with tools for reenvisioning and advancing clinical practice.

—Gena Heidary, MD, PhD, and
David K. Wallace, MD, MPH
Pediatric Ophthalmology
program directors

REFRACTIVE SURGERY

New Orleans Theater AB

Building on New Interest in Refractive Surgery and How to Keep the Momentum Going, presented by Michael C. Knorz, MD (Friday, 8:35-8:45 a.m.)

It is always inspiring to hear from a true pioneer. Michael C. Knorz, MD, has been that—both as a surgeon, who in 1993

introduced LASIK in Germany, and as a patient, becoming one of the first refractive surgeons to undergo a corneal procedure himself. With extensive experience in both corneal and lens-based procedures, Dr. Knorz will present an overview of current and future techniques that will enable the refractive surgeon to offer customized solutions for almost any patient's visual needs. Long-established interventions continue to be modernized; for example, photorefractive keratectomy may be performed through a transepithelial approach, and femto-LASIK is now used to create near-perfect flaps and correct for cyclotorsion and pupil offset. Phakic IOLs and refractive lens exchange are offering new opportunities for patients with high ametropia who, in the past, might have been reluctant to undergo these relatively more invasive procedures. As Dr. Knorz will convincingly explain: There is considerable momentum in refractive surgery—it is up to every practice to utilize and foster it!

—Burkhard Dick, MD, and
Deepinder K. Dhaliwal, MD
Refractive Surgery program directors

RETINA

The Great Hall

Management of Vision-Obscuring Vitreous Hemorrhage Associated With PVD: Observe or Operate? presented by Gaurav Shah, MD (Friday, 8:21-8:27 a.m.)

Panretinal Photocoagulation: A Rational Guide for Its Use, presented by David N. Zacks, MD, PhD (Saturday, 11:54 a.m.-12:00 p.m.)

Historically, patients with posterior vitreous detachment (PVD) complicated by vision-obscuring vitreous hemorrhage were managed with cautious observation while awaiting spontaneous clearing of the hemorrhage. Gaurav Shah, MD, will discuss the risks and merits of observation versus prompt vitrectomy to clear the hemorrhage, identify retinal breaks, and reduce the otherwise high incidence of retinal detachment in this setting. This information will help ophthalmologists and their patients to make the most prudent choice in this critical situation.

Since the DRCR Retina Network Protocol S clinical trial found similar outcomes for anti-VEGF therapy compared with panretinal photocoagulation (PRP) in the management of proliferative diabetic retinopathy (PDR), the use of anti-VEGF therapy for this indication has increased. David N. Zacks, MD, PhD, will highlight the relative risks and benefits of anti-VEGF injections versus PRP for PDR, emphasizing the durability of PRP in this vulnerable population and proposing a rational guide for its use in the anti-VEGF era.

—Mark W. Johnson, MD, and
Srinivas R. Sadda, MD
Retina program directors

EXCITING DEVELOPMENTS

CORNEA

La Nouvelle Orleans AB

Global Consensus on Limbal Stem Cell Deficiency, presented by Friedrich E. Kruse, MD (Saturday, 1:13-1:21 p.m.)

Limbal stem cell deficiency (LSCD) is among the most challenging of ocular surface diseases to diagnose, stage, and manage, due in part to its wide spectrum of presentations and subtle clinical signs in the mild stage. LSCD is often accompanied by comorbidities, including dry eye disease, eyelid abnormalities, and ocular surface inflammation. As such, management of LSCD requires a comprehensive approach. The presenter, Friedrich E. Kruse, MD, founded and led the International Limbal Stem Cell Deficiency Working Group to achieve consensus on the classification, diagnosis, staging, and management of LSCD. Dr. Kruse will present the findings and recommendations of the working group, which can serve as general guidelines for cornea specialists and comprehensive ophthalmologists on how to diagnose and manage LSCD.

—Sophie X. Deng, MD, PhD,
Vishal Jhanji MD, and Sonal S. Tuli, MD
Cornea program directors

GLAUCOMA

La Nouvelle Orleans AB

Journal Club/Late Breaking, moderated by Kelly W. Muir, MD, and Ian Conner, MD, PhD (Friday, 1:55-3:07 p.m.)

Sustained-release glaucoma drug delivery systems have the potential to transform the treatment of glaucoma. We will dive deep into the science and practical use of the bimatoprost implant. A panel of colleagues will take us through a clinical case to the evidence from clinical trials, to the basic science helping us understand the mechanisms of action, and back to the patient for a comprehensive discussion of this exciting development in glaucoma care.

—Brian A. Francis, MD, and
Kelly W. Muir, MD
Glaucoma program directors

NEURO-OPHTHALMOLOGY

La Nouvelle Orleans C

Is This Nerve Okay? Optic Nerve Disease, moderated by Anne Abel, MD, and John Chen, MD, PhD (Friday, 10:05-11:52 a.m.)

This session will review optic nerve diseases that are common yet often difficult to diagnose, as well as new and emerging diagnostics and therapeutics. Patients with optic nerve disease have, until recently, had little in the way of pharmacologic therapy other than corticosteroids for treatment of their disease. New treatments, new drugs, and revised treatment



NEURO-OPHTHALMOLOGY. *Is this nerve okay? Find out what's going on and how to best make that determination by coming to Drs. Abel and Chen's session on Friday.*

regimens for existing drugs are now available and will increase our treatment armamentarium. In this session, speakers and panelists will discuss difficult-to-differentiate cases of primary optic nerve disease and the new imaging modalities and techniques that can help clinicians discern them. Come to this session and get up to date on how to image and treat optic nerve disease.

—Peter A. Quiros, MD, and
Prem S. Subramanian, MD, PhD
Neuro-Ophthalmology program directors

OCULOFACIAL PLASTIC SURGERY

Room 243

What's New in Orbital and Adnexal Cancers, presented by Bitá Esmaeli, MD, FACS (Saturday, 1:55-2:07 p.m.)

We will receive an update by Bitá Esmaeli, MD, professor of ophthalmology at the University of Texas MD Anderson Cancer Center, on new treatments for orbital and adnexal cancers. This talk is essential for understanding the current biologics, chemotherapeutics, and therapies being used for eyelid and orbital cancers.

—Catherine J. Hwang, MD, and
Thomas E. Johnson, MD
Oculofacial Plastic Surgery
program directors

PEDIATRIC OPHTHALMOLOGY

Room 243

Looking to the Future—How Clinical Studies Will Impact My Practice,

moderated by Sergul Erzurum, MD, and David Wallace, MD (Friday, 2:15-3:45 p.m.)

Michael F. Chiang, MD, the new director of the National Eye Institute (NEI), will provide an exciting introduction to this session. Dr. Chiang will help to frame the discussion of evidence-based research and goals for the NEI within the context of pediatric ophthalmology.

Faculty of the Pediatric Ophthalmology Subspecialty Day program will expand on this to discuss key clinical studies and their importance in clinical practice. Topics will include intermittent exotropia, atropine therapy for myopia, treatment of retinopathy of prematurity, and management of optic neuritis.

—Gena Heidary, MD, PhD, and
David K. Wallace, MD, MPH
Pediatric Ophthalmology
program directors

REFRACTIVE SURGERY

New Orleans Theater AB

Laser-Generated Aperture to Extend Depth of Focus, presented by Omid Kermani, MD (Friday, 5:06-5:12 p.m.)

Although the optical principle of the small aperture as a means to increase depth of focus has been known for more than 400 years, it has recently been introduced in refractive surgery with varying degrees of success and patient satisfaction. Small-aperture IOLs such as the IC-8 and the Xtrafocus have shown

excellent visual results; a remarkable tolerance for astigmatism; and a significant reduction (compared with multifocal and extended depth of focus IOLs) of halos, glare, and shadows. Concerns about restricted night vision due to the small aperture have now been laid to rest: After an adaptation period of a few weeks, the retina “learns” to compensate.

If this principle is as good as we now

think it is, wouldn't it be great to convert an already implanted IOL into a small-aperture lens? As Omid Kermani, MD, will explain, we can. Femto-Masking, currently under development by a number of European companies, offers an elegant method for creating small apertures in the majority of common IOL materials. Femto-Masking can be performed according to the patient's needs and thus

offers an individualized—and truly exciting—new option in refractive lens and cataract surgery.

—Burkhard Dick, MD, and
Deepinder K. Dhaliwal, MD
Refractive Surgery program directors

RETINA

The Great Hall

Faricimab in Neovascular Age-Related

Macular Degeneration: 1-Year Efficacy, Safety, and Durability in the Phase 3 TENAYA and LUCERNE Trials, presented by Carl D. Regillo, MD (Saturday, 9:44-9:50 a.m.)

Newly released results from two phase 3 clinical trials of an investigational bispecific antibody, faricimab, demonstrate the potential of this new agent to reduce treatment burden in patients with neovascular age-related macular degeneration (AMD) by allowing extended dosing intervals. Carl D. Regillo, MD, will present the one-year efficacy, safety, and durability results of the phase 3 trials comparing faricimab with aflibercept in patients with neovascular AMD. If approved by the FDA, faricimab, which targets two distinct pathways (via angiopoietin-2 and VEGF-A), would represent the first new class of therapeutic agents for neovascular AMD in 15 years.

—Mark W. Johnson, MD, and
Srinivas R. Sadda, MD
Retina program directors



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Make the most of your time between sessions in New Orleans. Located in Room R02, 2nd floor, EyeNet Corporate Lunches offer a complimentary boxed meal with attendance at any of the three educational programs that take place Saturday-Monday, 12:45-1:45 p.m. Lunch pickup (served on a first-come, first-served basis) will begin at 12:15 p.m. Programs include:

Saturday, Nov. 13: “First-Line Treatment in Diabetic Retinopathy and Diabetic Macular Edema: A Patient Case-Based Approach” with speaker Nathan Steinle, MD. This program is presented by Regeneron Pharmaceuticals and designed for U.S. retina specialists.

Sunday, Nov. 14: “Navigating Dry Eye Disease: An Audience-Activated Adventure” with speaker Jay K Mattheis, MD, MSPH, FACS—Director, Peer Education for Novartis - US Ophthalmics. Dr. Mattheis is an employee of Novartis. This program is presented by Novartis Pharmaceuticals and designed for US eye care specialists.

Monday, Nov. 15: “A Difference in Drug Delivery” with speakers Ike Ahmed, MD (moderator), Oluwatosin Smith, MD, and Savak Teymoorian, MD. This program is presented by Allergan, an AbbVie Company, and designed for U.S. ophthalmologists.

For more information and a list of disclaimers for these sessions, see the related ad on page 4 or visit aao.org/eyenet/corporate-lunches.

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Saturday, November 13, 2021

9:15 AM

A Difference in Drug Delivery

Inder Paul Singh, MD

10:00 AM

Refractive Surprise: Evaluation of Cataract Surgery

Karl Stonecipher, MD

10:45 AM

Early FOTM—Early Identification for Patients with Diabetic Macular Edema

Anthony Mazulla, MD

11:30 AM

Experience and Evidence: Insights on Chronic Dry Eye Management

Laura Periman, MD

12:15 PM

Experienced-Based Surgical Perspectives

Oluwatosin Smith, MD

1:00 PM

Toric IOL Pearls: Preventing and Managing Misalignment

David Chang, MD

1:45 PM

Uveitis—A Recent Case in Uveitis: Current Therapeutic Options

Mark Dacey, MD

2:30 PM

A Difference in Drug Delivery

Jason Bacharach, MD

3:15 PM

When the Pressure Is on, Don't Compromise

Jason Bacharach, MD

4:00 PM

The Key Elements of Effective Intravitreal Injection Reimbursement

Richard Morgan

Sunday, November 14, 2021

9:30 AM

A Difference in Drug Delivery

Oluwatosin Smith, MD

10:15 AM

Experience and Evidence: Insights on Chronic Dry Eye Management

Mark Milner, MD

10:45 AM

DME Cases—Integrating Treatment Earlier in Diabetic Macular Edema

Daniel Kiernan, MD

11:45 AM

A Difference in Drug Delivery

Nathan Radcliffe, MD

12:30 PM

Surgical Pearls for Success

Inder Paul Singh, MD

1:15 PM

A Difference in Drug Delivery

Savak Teymoorian, MD

2:00 PM

PANEL DISCUSSION Overcoming the Unexpected: Managing Complex Cataract Surgeries

Zaina Al-Mohtaseb, MD; Kendall Donaldson, MD; and Cathleen McCabe, MD

3:15 PM

RVO Cases—Integrating Treatment Earlier in Macular Edema Following RVO

Gaurav Shah, MD

4:00 PM

The Key Elements of Effective Reimbursement in a Physician-Administered Treatment

Dawn Marsillo



Jazz-Rock, Mentors, and Mayo

The Making of the 2020 Academy Laureate: George B. Bartley, MD

The Laureate Award is the Academy's highest honor, recognizing an individual who has made an extraordinary and lasting contribution to the profession of ophthalmology. In addition to a distinguished career as an oculoplastic surgeon and professor of ophthalmology at the Mayo Clinic in Rochester, Minnesota, last year's recipient, George B. Bartley, MD, is widely known for his past and present leadership roles in many organizations. Among these are chief executive officer (CEO) of the American Board of Ophthalmology (ABO), CEO Emeritus of the Mayo Clinic in Florida, former editor-in-chief of *Ophthalmology*, past president of the American Ophthalmological Society, and member of the Foundation Advisory Board of the American Academy of Ophthalmology.

Less known is the personal history behind these achievements. *EyeNet* spoke with Dr. Bartley to learn more about the influences and experiences that helped guide him to the summit of his profession.

Turning Points and Inspirations

What drew you to ophthalmology and to oculoplastics in particular?

I entered university thinking I would major in psychology but, like most freshmen, really had no idea. I left school after that year to play in a jazz-rock band and spent the next 18 months traveling to 20 countries. During that time I crossed paths with several interesting physicians, in Eastern Europe and South Africa in particular, who seemed happy and challenged by their work. So, when I returned to school, I pursued a premed curriculum with a major in zoology and with minors in Chinese and religion.

Once in medical school I knew early on that I wanted to be a surgeon, in either plastic surgery or neurosurgery. Then, on an ophthalmology rotation, I remember looking through a slit lamp for the first time and being entranced by the beauty of the eye. When I found out that there was a subspecialty that com-

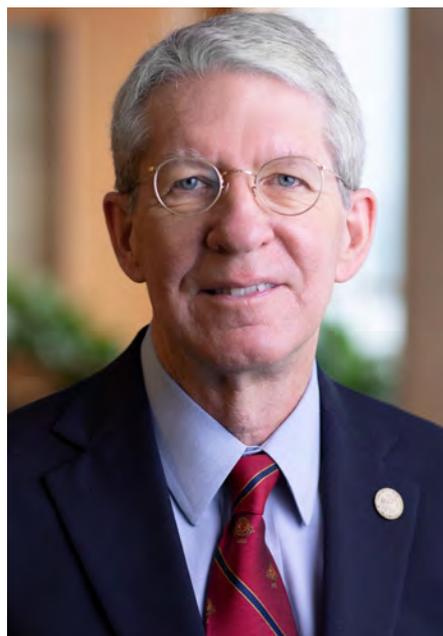
bined ophthalmology and plastic surgery, and even crossed paths with neurosurgery, the die was cast.

What were some important turning points in your life, education, or career? Who particularly inspired you?

Life is indeed all about relationships, and it is amazing how events and conversations that, at the time, seemed unimportant turn out to have major influences on the vectors of our life. As a young boy, I was fortunate to get involved with a Boy Scout troop led by a dedicated Scoutmaster. He stressed advancement, and it was through scouting that I first appreciated the gratification of achieving a goal through hard work.

In medical school, I remember scrubbing in with a cardiothoracic surgeon who was taking care of a patient with a gunshot wound to the chest. I was responsible for holding a sucker and was doing my best to keep a significant amount of bleeding out of the field. In the middle of the operation, the surgeon stopped, turned to me, and said, "You really enjoy this, don't you?" I very much doubt that he would recall that comment, but for me it was affirming.

When I went to Mayo Clinic for residency, I was fortunate to have many outstanding role models. The most influential, in alphabetical order, are the late Richard Brubaker, who was astonishingly brilliant and could have had any job at Mayo, but he preferred to do his glaucoma research and take care of patients, on his terms; the late Jean Campbell, who taught me the little pathology I know and, although she had no children of her own, taught me a lot about being a parent; the late Thomas Kearns—who, by the way, served as Academy president in 1986—who described the first mitochondrial myopathy (Kearns-Sayre syndrome) and the retinal findings of carotid occlusive disease, using just a direct ophthalmoscope; and Robert Waller, who is probably the most beloved and revered physician I've ever met, a wonderful oculoplastic surgeon, former Mayo Clinic



THE 2020 ACADEMY LAUREATE. Dr. Bartley receives last year's Laureate Recognition Award during the Opening Session.

CEO, and a mentor to many.

Outside of Mayo, I have dozens of role models but have been particularly inspired by Dan Albert, who knows everything about everything, has written about everything, yet is amazingly humble; Bruce Spivey, who has contributed so much to ophthalmology and to medicine and, in his mid-80s, is sharp as a tack and is often the first person to see something interesting and email it to me; and Brad Straatsma, whose equanimity and leadership style I have tried (usually without success) to emulate.

Achievements and Challenges

What do you consider your most important contributions in ophthalmology or medicine?

Thus far, my most significant contributions have probably been outside of our specialty through my leadership roles at Mayo Clinic and particularly as CEO of Mayo Clinic in Florida. We had five major objectives during my tour of duty there, but the most important was to build a hospital on our campus and to integrate it with the practice (which included the busiest liver transplant program in the United States) and our research and educational activities. Our team built the hospital on time and on budget. Opened in 2008, it is now consistently ranked as either the top or one of the top hospitals in the state. Since it was built to withstand a Category 5 hurricane, the hospital should be there in 100 years; and given how many patients it has served and will serve, I feel privileged to have played a role in that project.

In ophthalmology, my primary self-

identity is as a surgeon, and I love the interactions with my patients. A busy clinical practice provides lots of opportunities for teaching and research, and I hope that my work on thyroid eye disease in particular has been useful. But I have enjoyed learning about and writing about a fairly wide range of topics over the past four decades. My first publication was a case report in the *New England Journal of Medicine* as a medical student about fenugreek ingestion mimicking maple syrup urine disease in a newborn—about as far from ophthalmology as one can get!

What were some challenges in achieving those contributions?

Not enough time! Mayo Clinic provides little protected time for scholarly activities unless extramurally funded, so pretty much all of my research has been conducted and papers have been written during evenings and weekends. On the other hand, the weather in Minnesota is conducive to such activities for about six months of the year. Also, when one is appointed department chair, which happened unexpectedly to me at age 36, one is expected to continue leading by example, so administrative duties typically are done during interstitial time between patients.

You have been deeply involved in journals, especially as editor-in-chief of Ophthalmology and Ophthalmic Plastic and Reconstructive Surgery. What were some of your experiences in publishing?

Working with journals has been a delight and, of course, a wonderful learning opportunity, not only about the science but also about the authors. In the 1990s I was on the editorial board of both the *American Journal of Ophthalmology* and *Ophthalmology*, as well as doing at least one review per week for *Plastic and Reconstructive Surgery*, the journal of note in that field. I also served on the *Archives of Ophthalmology* editorial board. So during these times, there wasn't a lot being published in oculoplastics that I wasn't seeing in its original form.

When it was time for Andy Schachat to conclude his term as editor-in-chief of *Ophthalmology*, I was honored to be asked to throw my hat in the ring, although I made it clear to the search committee that as an oculoplastic surgeon who had just spent several years as essentially a full-time administrator, I really didn't know much about the eye. Nevertheless, I somehow got the job, and it was the most



TRANSITION. The Ophthalmology editorial board editors give Dr. Bartley a festive send-off during AAO 2016 in Chicago, as he moves on to head up the ABO.

CONTINUED ON PAGE 30



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From Football to Retinal Surgery The Career Arc of 2021 Academy Laureate Michael T. Trese, MD

Few ophthalmologists have had as profound an impact on an eye disorder as Michael T. Trese, MD, has had on pediatric retinal detachment. He is a preeminent practicing pediatric vitreoretinal surgeon, who revolutionized his field in the late 1980s with the concept of lens-sparing vitrectomy, and a dedicated educator, who has shared his surgical skills with a generation of fellows and colleagues. And the techniques he developed are now performed around the globe and have restored sight to untold thousands of children.

Dr. Trese has also changed the face of telemedicine. Recognizing the difficulties in providing timely screening of babies for retinopathy of prematurity (ROP), he spearheaded the development of photographic screening protocols used worldwide. Last but not least, he has investigated numerous pathways in the pathogenesis of retinal disease. Most recently, he and his colleagues have explored the application of regenerative medicine to cellular signaling pathways in the retina—a possible game-changer for preventing visual loss and restoring sight.

For these and countless other reasons, the Academy is recognizing Dr. Trese with its highest honor—the 2021 Laureate Award.

Starting Point

What drew you to ophthalmology, particularly to pediatric retina?

My path to ophthalmology was very circuitous, to say the least. I originally attended the University of Michigan with the intent of playing professional football. Back in elementary school, I lived a block away from the university's practice field and I'd poke my head through the fence, watching the players and thinking, "That's what I'm going to be when I grow up."

As it turned out, I wasn't very good at football in college, but that experience still served as a springboard. The university set up each player on the team with part-time jobs to make a little money. One of the positions I landed upon was as a scrub tech at St. Joe's Hospital in Ann Arbor. After an intensive two-day training period, I was thrown into the OR and noticed that the only surgeons who seemed remotely happy each day were the eye doctors. So when a knee injury ended my brief football career, a family friend, who was with the U.S. Department of Health, Education, and Welfare, told me that I should become an optometrist given my interest in physics, biology, and optics.

So I entered optometry school. And during my third week, as the faculty lectured on the differences between an optician, an optometrist, and an ophthalmologist, I suddenly realized that I was in the wrong place for what I wanted to do. But this was during the Vietnam War, so I was advised to complete the program and avoid enlistment. Shortly thereafter, I applied to the Georgetown University School of Medicine, which of course cleared my path toward ophthalmology.

And it was during my residency at the Jules Stein Eye Institute in Los Angeles that I first was struck by pediatric retina and witnessed how I could change the entire life of a person. I was following a baby in the clinic with ROP—and at the time, we had no criteria and no real staging of the disease. So I told the family to come back a month after the child was discharged for a follow-up. Upon his return, the child presented with stage 5 ROP and total bilateral retinal detachment. I literally ran to get the attending, who told the family there was absolutely nothing that could be done. Their son was now blind. I was in total and complete shock. I just couldn't believe it. So I left residency with that experience always in my mind and never looked back.

Changing the Paradigm

What do you consider to be your most important contribution to medicine?

I've always prided myself on advancing the understanding of pediatric retinal diseases and developing therapeutic approaches for treating some of ophthalmology's most difficult pathologies. And what's likely made the biggest difference in the lives of surgeons and children is lens-sparing vitrectomy for retinal detachment due to ROP.

The history of this procedure's development is interesting. Back when I was an intern, I saw a female patient with very proptotic eyes who had been stabbed with a hair pick through the ciliary body pars corona (pars plicata) and out the other side via the pars plana. We quickly closed the wounds with sutures, and the patient ended up 20/20 without any bleeding. Fast forward to my residency, and I was now being taught that if a surgeon entered the eye through the ciliary body pars corona (much like the hair pick) the eye would most likely bleed out—that is, the eye would not be able to sustain such a procedure. But that didn't mesh with the reality that I saw firsthand.

Fueled by this experience, my colleagues and I eventually developed a pars corona vitrectomy that 1) saves



THE 2021 ACADEMY LAUREATE. Dr. Trese will receive this year's Laureate Recognition Award during the Opening Session.

the lens, 2) doesn't make the eye aphakic, and 3) doesn't create tremendous anisometropic amblyopia. This allows us to now operate on children who have extraordinarily high chances of blindness.

I see many of those same children again as young adults who are very thankful and who are able to function normally. Some of them have maintained 20/20 vision even for the last 20 to 30 years. That's extremely rewarding.

And that's one pearl of wisdom I'd like to impart to all ophthalmologists. We are all very success-oriented as physicians and surgeons. As a result, many of us tend to stay away from those patients who have real and serious potential for blindness. Yes, these cases require extra attention and can lead to failure, but success can be fantastically satisfying.

You have decades of experience creating and shepherding pharmacologic therapies for treating conditions such as symptomatic vitreomacular adhesion. What do you think are some of the keys to successful innovation?

Let's take first things first: When I started out, the regulatory environment was much different than it is today. For example, I would design a lot of hand-held surgical instruments decades ago, and that process basically involved me providing a company with a hand drawing of the tool for an almost immediate production turnaround. I provided the sketch on Monday and would be trying it out in the OR on Friday.

That's obviously no longer the case. Every step of the way is now much more detailed, complicated, and regulated. And going through this process takes educa-

tion—it's almost like getting a PhD. You have the medical knowledge. You believe in your idea. And maybe you even know more about your idea than anyone else in the world. But you also need to learn the business side and how to sculpt a path for regulatory success. That's why we've started a Center for Ocular Innovation at Oakland University for young ophthalmologists—to teach them the rules of the game, including funding, proof of concept, and designing the right experiment. It's also to teach them that perseverance is of the utmost importance, because turning an idea into a product can take more than a decade, especially if it's a pharmaceutical.

So for all of the young ophthalmologists out there who aspire to be tomorrow's physician-innovators, check and see if your programs offer similar types of fellowships and reach out to established colleagues and faculty. At the moment, you're likely not prepared to maneuver around the nonmedical side of innovation, but there are a lot of us here to help you acquire a skill set that can help you make your own lasting contributions.

What other advice would you give young physicians who are just starting out, either in training or in practice?

Find something that you find to be exciting. One of the things that keeps me going, for example, is the area of regenerative medicine. For well over a decade, my colleagues and I have been working on a retinal therapeutic that regenerates both the neuronal and vascular tissue, and we think that's going to be an important part of ophthalmology's future.

It's essential that residents, fellows, and trainees take the time now to think down the road. They need to envision what they want from their careers and what they want to achieve in 15 or 20 years. Yes, performing surgeries will of course be rewarding for you and helpful for your patients. That goes without saying. But what's going to make you especially excited about getting up in the morning and coming in to work?

Because, in the current moment, physician burnout has become a serious problem in ophthalmology. And this stems from simply no longer finding that special joy in what you do each and every day. Personally, I need something that's new, something that pushes the profession forward—for example, taking an eye disorder with little to no hope for treatment and changing the paradigm. It will be different for each ophthalmologist, but that's what continues to keep me entirely fascinated with our profession.

The Jackson Memorial Lecture

On Clinician-Scientists and the Promise of Molecular Diagnostics

Russell N. Van Gelder, MD, PhD, presents the 78th Edward Jackson Memorial Lecture at the Opening Session of AAO 2021. Dr. Van Gelder is professor of ophthalmology and Boyd K. Bucey Memorial Chair at the University of Washington, where he also serves as founding director of the UW Medicine Eye Institute, UW Vision Science Center, and Roger and Angie Karalis Johnson Retina Center.

A commitment to research. As a clinician-scientist, Dr. Van Gelder heads a laboratory that is involved in researching the mechanisms of uveitic disease, including discovery of novel pathogens in uveitis. Other areas of focus include nonvisual photoreception and how photochemical nanomedicines could potentially restore vision to blind patients.

Entering ophthalmology's hall of fame. Dr. Van Gelder said that he is “humbled and grateful” to be chosen as this year’s lecturer. He described the previous lecturers as “the hall of fame of ophthalmology,” adding, “I don’t think I belong there.” But his lab’s innovative research in molecular diagnostics—the subject of this lecture—should dispel any such doubts: It promises to have substantial impact on the management of ocular infectious disease by bringing advanced diagnostic techniques into the ophthalmology clinic.

Honors in Ophthalmology

Dr. Van Gelder served as Academy president in 2015 and has been a member of the board of trustees and chair of the Council.

Dr. Van Gelder has also served as president of the Association of University Professors of Ophthalmology, the American Uveitis Society, and the Washington Academy of Eye Physicians and Surgeons. He is currently a member of the Council of Councils of the National Institutes of Health. He has served for many years on the editorial boards of *Ophthalmology*, *Ophthalmology Retina*, and *Ophthalmology Science*.

Serendipitous Beginnings

Although such a record of accomplishment requires focus and effort, Dr. Van Gelder also credits serendipity for directing his path at key moments. Perhaps the most important was a conversation that led him to ophthalmology.

In his third year of the combined MD-PhD program at Stanford Medical

School, he was undecided about his medical specialty. But his housemate, who had just done an ophthalmology rotation, told him, “This is a great field, Russ; you are meant to do this.” And within the first few days of the rotation, Dr. Van Gelder was convinced that ophthalmology was his future. “The combination of surgery and medicine—as well as the ability to make a direct difference in the lives of patients—really appealed to me,” he said.

Similarly, during residency at Washington University in St. Louis, Dr. Van Gelder was enjoying rotations in cornea, retina, and neuro-ophthalmology. He had never considered uveitis when Henry J. (Hank) Kaplan, MD, chair of ophthalmology, “made me an offer I couldn’t refuse.” Dr. Kaplan said that the department would need another uveitis specialist in the foreseeable future. “And he suggested a whole package to me in which I would do a uveitis fellowship at WashU, set up my laboratory during that time, and then begin a research and clinical career,” said Dr. Van Gelder. “I am deeply grateful for Dr. Kaplan’s faith in me and for getting me started in uveitis. I’ve thoroughly enjoyed practicing uveitis for the past 20-plus years.”

After completing fellowships in uveitis and medical retina, Dr. Van Gelder remained on the faculty at Washington University from 1999 to 2007. He has held his current position at the University of Washington, in Seattle, since 2008.

Key Mentors

Dr. Van Gelder acknowledged the importance of inspiring mentors at all stages in his education and early career. “There have been so many—I wish I could name them all.” During his Stanford PhD studies in the neurosciences, William Dement, MD, PhD, and Jack Barchas, MD, strongly encouraged him to follow the career trajectory of a clinician-scientist. Also at Stanford, Mark Krasnow, MD, PhD, “really taught me rigor in science.”

After that, residency at Washington



FRIDAY NIGHT HIGHLIGHT. Dr. Van Gelder will deliver the Jackson Memorial Lecture during the Opening Session on Friday, 5:00-6:30 p.m., in the Morial Convention Center.

University provided “a fantastic training experience that was both rigorous and supportive.” Among the many who guided him, Dr. Van Gelder cited Hank Kaplan; residency director Carla Siegfried, MD; David C. Beebe, PhD; and “my greatest career role model, Bernard Becker, MD, one of the 20th century gods of ophthalmology, who was a great mentor to me.”

Dr. Van Gelder is also grateful to those in the wider world of ophthalmology who “took me under their wing,” especially Stuart L. Fine, MD, “who befriended me when I was a medical student and has been a great source of advice and inspiration.” Finally, during Dr. Van Gelder’s term as Academy president, he worked closely with Academy CEO David Parke. “I learned so much just by being in his environs, and I consider him a great mentor and role model in the area of leadership.”

Dr. Van Gelder also stresses the support of his family. “My wife, Suzy—also an accomplished academic physician-scientist—and our kids, Rachel and Max, have been extremely supportive. I am eternally grateful for their love and support.”

Paying It Forward

Dr. Van Gelder considers his greatest accomplishment in ophthalmology to be the many innovative clinicians and researchers he has influenced. “I hope that, in the future, they’ll remember me as someone who fostered the careers of younger and more talented people so

they could do amazing things.”

Dr. Van Gelder encourages younger ophthalmologists to “follow your passion, not the crowd. Seek the unique contribution that you can make.” And at all career stages, “Never assume you’ve mastered your field—never stop learning. The great doctors continue to read deeply and engage in education.”

Diagnostic Innovation

Dr. Van Gelder provided a preview of his lecture, which will focus on his lab’s research in diagnostic technology.

From the 19th century to today.

“Infectious disease in the eye is one of the few threads that tie all ophthalmologists together, whether in cornea, plastics, or pediatrics,” he said. “But infectious disease diagnosis got stuck in the 19th century for a long time, employing many of the same techniques that Robert Koch or Louis Pasteur would have used—streaking specimens on culture dishes and looking under a microscope.

“Because current diagnostic methods can be slow—and the speed with which infectious disease can blind is so fast,” Dr. Van Gelder said, “our approach is often to ‘shoot first and ask questions later.’ That is, if a patient walks into the office with a corneal ulcer or endophthalmitis, we basically throw the most powerful antibiotics on the planet at them, and then try to figure out what they have later.”

The promise of molecular diagnostics. Advances in molecular diagnostics could make this approach a thing of the past. Dr. Van Gelder will summarize the evolution of these techniques and will share “some of the surprises we’ve found along the way regarding what organisms are found in or on the eye associated with disease processes.”

Looking ahead, he foresees a rapid diagnostic process in which “we can take a corneal scraping or a vitreous tap right in the office, put it in a little machine, and determine the causative organisms during the appointment.”

According to Dr. Van Gelder, such point-of-care testing may be available in the clinic sooner than we imagine. His group is developing just such a device: “It’s basically a DNA sequencer the size of USB dongle that’s capable of generating 2 billion base pairs of DNA a day in sequence, and it sequences fast enough that we think we can identify the infections in a sample within minutes in the clinic. And I do think the technology is just about feasible right now.

“What we’re doing is at the cutting edge for any infectious disease.”

The 2021 Presidential Guests Tales of Support, Advice, and Friendship

Each year, the Academy president selects three individuals to be guests of honor at the annual meeting. Tamara R. Fountain, MD, 2021 president, chose her guests for their roles in her early career. Here, Dr. Fountain details the specific reasons for each selection. Dr. Fountain will recognize her Guests of Honor, as well as the recipients of the 2020 and 2021 Special Recognition Award and Distinguished Service Award. This happens at the Opening Session, which takes place on Friday from 5:00 to 6:30 p.m. in The Great Hall.

GUEST OF HONOR Paul P. Lee, MD, JD

Who is Dr. Lee? He is the F. Bruce Fralick Professor and Chair of Ophthalmology and Visual Sciences at the University of Michigan Medical School and director of the W.K. Kellogg Eye Center. He is also president of the Association of University Professors of Ophthalmology (AUPO).

How did you meet him? I have known Paul since 1989 when I arrived at the Johns Hopkins Wilmer Eye Institute as a first-year resident, and he was in his third year. The first few weeks of residency are like trying to drink from a firehose for just about any new resident. I found it particularly disorienting and, during some stretches, quite isolating. Paul saw that I was struggling and took me under his wing, providing a welcome guiding light in the fog of early residency and, I will add, to this day.

What do you admire most about him? His style. His grace. His humility and ever-present broad smile. He is an internationally recognized expert in ophthalmic population health and a chairman of a top-ranked academic department, yet no matter who you are, he will make time for you like you are the only other person in the world. If you ever compliment him, he will usually cite somebody else he feels deserves the praise more or turn the compliment right back around on you. He is one of the humblest people you will ever know.

Paul is also a long-time member of Women in Ophthalmology (WIO). Not every guy is going to advertise that, but he will tell you, in addition to supporting the group's mission, WIO meetings are great opportunities for him to recruit top talent for his department! I think that speaks volumes about Paul: He's always looking to support people who might not have ready support elsewhere.

What's the best advice he's given you? When I was selected to be an Academy Trustee-at-Large in 2004, Paul took



DR. LEE was "my guiding light in the fog of residency." Dr. Fountain (near the front, third from left) and her guest Dr. Lee (in glasses behind Dr. Fountain) pose for a group photo during their residency at the Johns Hopkins Wilmer Eye Institute, where they met in 1989.

me aside and said, "Tamara, I have great visions for your future in our profession, but here's a bit of advice. People are going to start coming to you with assignments to take on and roles to play, and I know you're going to want to say yes to all of those. That's just your nature and part of why you're where you are today," but he warned me to be wary of overextending myself. "Say yes when you can, but more importantly, learn to say no when you must." He helped me understand that it's okay to say no sometimes and gave me advice for doing so gracefully.

GUEST OF HONOR Don Liu, MD

Who is Dr. Liu? He recently retired, but he was the head of oculoplastics at the University of Missouri. And at the beginning of my career, he was my fellowship preceptor at the University of Southern California (USC).

How did you meet him? This is an interesting story. Plastics is unlike other ophthalmic fellowships in that you need to apply early—back when I was in training, it was during second year of residency. The problem was that I didn't decide to pursue plastics until I was a third year. This meant that I'd have 12 months to kill.

I was pregnant with my second child at the time, and I thought a gap year would be the perfect maternity sabbatical before jumping back in to a fellowship. After interviewing across the country and as the end of residency approached,

I anxiously awaited match day, hoping I'd get my top choice. When the letter came, I learned that I didn't get my top choice. Or any choice. I hadn't matched anywhere. Residency ended, and I had no job, no fellowship, and no prospects.

My gap year as a full-time mom turned into two. I felt I'd squandered my medical career before it even started. By this time, I was in Chicago, where my husband had taken a new job. One day, I hear about this guy, Don Liu, out at USC who had just been approved to start a new two-year fellowship by the American Society of Ophthalmic Plastic and Reconstructive Surgery

(ASOPRS). Due to early match timing, he was going to have to interview independently for his first fellow. It didn't seem realistic to pursue an opportunity out in Southern California, but my family encouraged me to interview anyway.

I flew out to LA and made the case that he should pick me—a woman with two toddlers whose husband had to stay in Chicago to work. Looking back on it, I'm not sure any other newly minted fellowship preceptor would have taken that gamble. But for some reason—I'll never quite know—Don took that chance. Simply put, I owe my career in oculofacial plastic surgery to his fateful choice.

What's the best advice he's given



DR. LIU was Dr. Fountain's fellowship preceptor at USC. He took her to many Chinese restaurants in Los Angeles during this time.

you? It's advice that I now give to my own residents—the importance of economy of motion. By that, he meant if you can complete a surgery in five steps instead of 10, it will be better for the patient and for the overall outcome. As a surgeon, you shouldn't rush, but you should work deliberately. Don't waste movement. Don't waste time.

GUEST OF HONOR Terri L. Young, MD, MBA

Who is Dr. Young? She is the Peter A. Duehr Endowed Professor and Chair of the Department of Ophthalmology and Visual Sciences at the University of Wisconsin, Madison. She is an internationally acclaimed pediatric ophthalmologist and clinician-scientist with expertise in



DR. YOUNG has "given me confidence when I'm listening to my imposter syndrome." Here, Dr. Young is seen with her daughter (center) and Dr. Fountain's daughter in 1995.

ophthalmic genetics and genomics in the areas of refractive error, ocular development, and childhood glaucoma. She is on the board of trustees of the AUPO and the Foundation of Association for Research in Vision and Ophthalmology (ARVO).

How did you meet? She was ahead of me in medical school at Harvard. She's a tennis player, as am I, so we used to play together on a court that was in the courtyard of our dorm. I can't recall who won most of those contests, but I think we were pretty evenly matched. It really was a coincidence that we both chose ophthalmology. After medical school, she headed to Chicago while I headed to Baltimore.

Fast forward to the mid-90s. I was a fellow at USC, and she was junior faculty, running a lab at the University of Minnesota. She called saying she was rotating off this new Academy group called the Young Ophthalmologist (YO) Committee. Even then, Terri recognized the importance of diversity in leadership

and hoped that I would consider taking her place and champion a perspective not commonly represented at that time. I said yes to this first Academy role, never recognizing it was the start of a remarkable journey that has brought me, almost 25 years later, where I am today.

What do you admire most about her? Terri is a world-renowned expert in genetics research and has carved out an exemplary career as a highly respected chair of a top-rated academic department. As a Black woman, she has had to overcome hurdles that simply weren't there for many others who've traveled her path. Naturally, I could relate to that. Terri has used some of these struggles to inform how she approaches faculty development in her own department as well as her commitment to organizational diversity and to mentoring the next generation of promising clinician-scientists. I've admired her focus, her passion, and her steadfast determination to make things easier for those who follow her. I have been the lucky recipient of some of her best life lessons.

What's the best advice she's given you? From the YO committee to now, she's encouraged me to stretch beyond my comfort zone. If I'm considering a new opportunity but suffering a bout of imposter syndrome, she'll remind me, "You have everything it takes, and whatever you don't have, you'll learn on the job."

SPECIAL RECOGNITION AWARD

This award recognizes individuals or organizations for outstanding service in a specific effort or cause that improves the quality of eye care.

2020. The recipient of the 2020 Special Recognition Award is the **American College of Surgeons (ACS)**. The ACS serves as one of the largest medical societies in the United States. It coordinates and leads many of the advocacy efforts for issues on behalf of surgery, surgeons, and their patients. The Academy and the ACS have a long history of strong collaboration.

2021. The recipient of the 2021

Special Recognition Award is the **Young Ophthalmologist (YO) Committee**. Since its inception, the YO Committee and its subcommittees (*YO Info* Editorial Board, YO Advocacy Subcommittee, and YO International Subcommittee) have brought a significant voice and more effective representation to the newest Academy members—the potential future leaders of the profession.

DISTINGUISHED SERVICE AWARD

This award recognizes individuals or organizations for ongoing notable service to ophthalmology and the Academy.

2020. The recipient of the 2020 Distinguished Service Award is **Paul A. Sieving, MD, PhD**, who is being honored



Dr. Sieving

for his innovative work as a clinician and scientist. From 2001 to 2019, Dr. Sieving served as the Director of the National Eye Institute, and he is currently a professor of ophthalmology at the University of California, Davis.

2021. The recipient of the 2021 Distinguished Service Award is **Jane Aguirre**, the Academy's Vice President of Membership and Alliances, who is being honored for four decades of service to the Academy. Since joining the Academy staff in 1981, Ms. Aguirre has been an integral part of many important Academy initiatives, including the development of the Ophthalmic Mutual Insurance Company, the Minority Ophthalmology Mentoring program, and, most recently, the Truhlsen-Marmor Museum of the Eye.



Ms. Aguirre

Note: Because AAO 2020 was a virtual meeting, both the 2020 and 2021 Special Recognition and Distinguished Service awardees will be recognized at this year's Opening Session (event code Sym48).

When: Friday, 5:00-6:30 p.m. **Where:** The Great Hall.

2020 and 2021 ISRS AWARDS

On Friday, the president of the International Society of Refractive Surgery (ISRS), Dr. Renato Ambrosio Jr., presents some of the profession's most prestigious awards at Refractive Surgery Subspecialty Day 2021: How Can We Do Better? Following are the awards and their recipients.

2020/2021 José I. Barraquer Lecture and Award: Steven Wilson (United States). The José I. Barraquer Lecture and Award honors a physician who has made significant contributions in the field of refractive surgery during his or her career. This individual exemplifies the character and scientific dedication of Dr. José I. Barraquer—one of the founding fathers of refractive surgery, who innovated both in techniques and instrumentation. Attend the lecture. **When:** Sunday, 4:33-4:57 p.m., during Sym31, Controversies in Cataract and Refractive Surgery. **Where:** La Nouvelle Orleans AB.

2020 Annual Richard C. Troutman, MD, DSc (Hon) Prize: Pooja Khamar (India). The Troutman Prize recognizes the scientific merit of a young author publishing in the *Journal of Refractive Surgery*. This prize honors Dr. Richard C. Troutman. Attend the lecture. **When:** Friday, 11:17-11:32 a.m., during Refractive Surgery Subspecialty Day 2021. **Where:** New Orleans Theater AB. **Access:** Friday Subspecialty Day registration required.

2021 Annual Richard C. Troutman, MD, DSc (Hon) Prize: Min Li (China). The Troutman Prize recognizes the scientific merit of a young author publishing in the *Journal of Refractive Surgery*. This prize honors Dr. Richard C. Troutman. Attend the lecture. **When:** Friday, 11:32-11:47 a.m., during Refractive Surgery Subspecialty Day 2021. **Where:** New Orleans Theater AB. **Access:** Friday Subspecialty Day registration required.

Casebeer Award: Jodhbir Mehta (Singapore). The Casebeer Award, named in honor of Dr. J. Charles Casebeer, recognizes an individual for his or her outstanding contributions to refractive surgery through nontraditional research and development activities.

Founders' Award: Andrzej Grzybowski (Poland). The Founders' Award recognizes the vision and spirit of the Society's founders by honoring an ISRS member who has made extraordinary contributions to the growth and advancement of the Society and its mission.

Kritzinger Memorial Award: Arthur Cummings (Ireland). The Kritzinger Memorial Award recognizes an individual who embodies the clinical, educational, and investigative qualities of Dr. Michiel Kritzinger, who advanced the international practice of refractive surgery.

Lans Distinguished Award: John Berdahl (United States). The Lans Distinguished Award honors Dr. Leedert J. Lans. Given annually, this award recognizes an individual who has made innovative contributions to the field of refractive surgery, especially in the correction of astigmatism.

Lifetime Achievement Award: Paolo Vinciguerra (Italy). The Lifetime Achievement Award honors an ISRS member who has made significant and internationally recognized contributions to the advancement of refractive surgery during his or her career.

Presidential Recognition Award: Tadeu Cvintal (Brazil) and Dan Reinstein (England). Dr. Ambrosio notes the following about his selections:

Dr. Cvintal was the first cornea fellow at the Wills Eye Hospital. He also did a retina fellowship at the Schepens Institute. Since the 1970s, he has closely followed all the developments in ophthalmology, with a special interest in refractive surgery. He was a pioneer in incisional and lamellar refractive surgery, excimer laser, and IOL procedures. His institution has trained over 200 ophthalmologists in Brazil.

Dr. Reinstein is a genuine refractive surgeon. Since early in his career, he has pioneered the work with very high frequency ultrasound for layered or segmental tomography of the cornea and anterior segment. His active and prolific academic career has yielded significant contributions to the field, including keratoconus diagnosis, presbyopia blended vision correction, SMILE, and therapeutic procedures.

Waring Memorial Award for a Young Ophthalmologist: Fernando Faria-Correia (Portugal). The Waring Memorial Award for a Young Ophthalmologist recognizes an ISRS member early in his or her career who has demonstrated a commitment to ISRS, as well as a commitment to the promulgation of knowledge and the practice of refractive surgery. This award honors Dr. George O. Waring III for his commitment to the profession and ISRS.

To join ISRS, visit the Member Services desk at the Academy Resource Center (Hall G, Booth 4039), where you can pick up an application form. You also can visit www.isrs.org.



YO Committee and YO Subcommittees

Preview BCSC's Forthcoming Chapter: Social Determinants of Health

The chapter below will be published next June in the 2022-2023 edition of the *Basic and Clinical Science Course (BCSC)*. To make it available as soon as possible, it is published here and online (aao.org/diversity-equity-and-inclusion).

Each year, the BCSC committees conduct major reviews of three BCSC sections (see page 20) and implement minor revisions of the other 10.

New SDOH chapter for BCSC's 2022-2023 edition. The new "Social Determinants of Health" chapter will be included in the 2022-2023 BCSC, as part of the minor revision of *Section 1: Update on General Medicine*. The minor revision process is normally used to identify and correct errors in the text, as well as to add critical pieces of information that cannot wait for a volume's next major revision. The BCSC committees recognized the importance of introducing the concepts presented in the following pages without delay and developed material for this new chapter, working within the space constraints imposed by the minor revision process. The BCSC committees also recognize that some of the SDOH terminology may evolve, in which case the text will be updated accordingly.

More extensive SDOH content scheduled for BCSC's 2023-2024 edition. The chapter below presents an evolving, high-level overview of social determinants of health and serves as a preview of the full-length version of the text that will be included in the 2023-2024 major revision.

Learn more at AAO 2021. This year's annual meeting includes several events that discuss diversity, equity, and inclusion (see "Don't Miss These DEI Events," next page). And if you want to learn more about what's new with BCSC, you can attend an instruction course presented by the BCSC editors and also visit the Academy Resource Center (see "What's New With BCSC's 2021-2022 Edition," page 20).

CHAPTER 17: SOCIAL DETERMINANTS OF HEALTH

Highlights

- Social determinants of health (SDOH) are major drivers of health disparities.
- Addressing SDOH will "create social, physical, and economic environments that promote attaining the full potential for health and well-being for all"

(Healthy People 2030; see list of sources on page 20).

- Minority ethnicity, lower educational attainment, lower income, and lack of insurance are all associated with greater visual impairment in the United States.
- Ophthalmologists should assess the impact of SDOH as part of every patient encounter and should address SDOH in their treatment of patients.

Introduction

Health is not the absence of disease but the presence of wellness. As illustrated in Figure 17-1, health is the result of the complex interplay of individual factors (e.g., genetics, lifestyle), population factors (e.g., ethnicity, gender, sexual orientation), and social determinants.

Social determinants of health (SDOH) are conditions in the environment in which people grow, live, learn, work, and age that affect health outcomes. Over the past few decades, increasing evidence has suggested that complex social, physical, and economic conditions have a greater impact than medical care on health outcomes and life expectancy. In its 2008 report, the World Health Organization stated that "social justice is a matter of life and death. It affects the way people live, their consequent chance of illness, and their risk of premature death." The report calls for organized global action to address SDOH in order to achieve health equity.

Health inequities are avoidable, systematic differences in health status between different population groups. SDOH are a major cause of *health disparities*. The pursuit of health equity requires a concerted, societal effort to remove barriers such as discrimination and poverty and their many consequences.

Categories of Social Determinants of Health

Recognizing the social, economic, and physical conditions that different populations experience because of their environments is fundamental to understanding and addressing SDOH, which can be grouped into five domains:

- health care access and quality (e.g.,

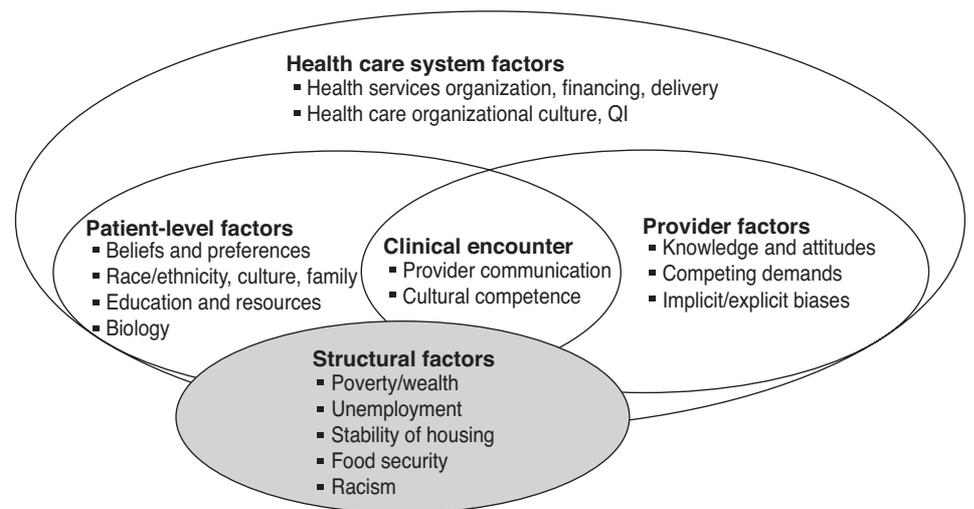


FIG. 17-1. Key potential determinants of health and health care disparities. QI = quality improvement. (From Bryant A. *Racial and ethnic disparities in obstetric and gynecologic care and role of implicit biases*. In: UpToDate. Oct. 29, 2020. Used with permission from Kilbourne AM, Switzer G, Hyman K, Crowley-Matoka M, Fine MJ. *Advancing health disparities research within the health care system: a conceptual framework*. *Am J Public Health*. 2006;96(12):2116. Copyright © 2006 American Public Health Association.)

insurance, physician availability, communication)

- economic stability (e.g., employment, income, housing and food security)
- education access and quality (e.g., education, literacy, language skills)
- neighborhood and built environment (e.g., transportation, safety, geography, parks)
- social and community context (e.g., community engagement, social cohesion, incarceration rates)

Health Care Access and Quality

There are several barriers to accessing health care and receiving high-quality care.

First, although the rates of uninsured Americans have decreased under the Affordable Care Act, approximately 10% of people in the United States remain uninsured. Vulnerable population groups, such as minority groups, account for over half of the uninsured population.

Second, inadequate health insurance coverage resulting in high out-of-pocket costs continues to be one of the largest barriers to health care access.

Other barriers include poor access to transportation, limited health care resources and provider availability in underserved areas, and poor provider-patient communication. Poor communication can be due to several factors, including patient fear or lack of trust, lack of time, cultural and language barriers, and lower literacy levels. These social complexity factors have been associated with poorer outcomes with respect to preventive health care and management of chronic disease.

Priorities for addressing this domain should include the following:

- expanding access to appropriate insurance coverage and to primary care and health professionals, both in person and remotely
- focusing on preventive health care
- improving health communication between physicians and patients through cultural competency training and by ensuring availability of patient education material in various languages and at the appropriate education level
- offering telehealth to improve services and expand access
- providing vision services in community health centers and vision outreach in underserved areas
- optimizing the electronic health record for screening and patient communication

Ophthalmic considerations.

Compared with White patients, Black and Latino patients and other ethnic minority groups have higher rates of diabetic retinopathy, impaired vision due to cataract, and primary open-angle glaucoma (POAG). But despite being at higher risk for visual impairment and blindness, Black and Latino patients are less likely than White patients to be seen by an ophthalmologist or to receive a dilated examination.

A study by Elam and colleagues found that Medicaid patients with a new diagnosis of POAG receive substantially less glaucoma testing in the 15 months following initial diagnosis compared with patients with commercial health insurance. This disparity is most striking in Black patients with Medicaid insurance,

who had 291% increased odds of not undergoing glaucoma testing, compared with Black patients with commercial health insurance. Further, Black patients are more likely than White patients to go blind from POAG, highlighting the importance of efforts to improve the quality of glaucoma care for Medicaid recipients and ethnic minority groups.

Elam AR, Andrews C, Musch DC, Lee PP, Stein JD. Large disparities in receipt of glaucoma care between enrollees in Medicaid and those with commercial health insurance. *Ophthalmology*. 2017;124(10):1442-1448.

Economic Stability

A substantial body of research has demonstrated the detrimental effects of low socioeconomic status and poverty on health outcomes. Economic stability is one of the most important SDOH, as it affects all other domains. Without stable employment, one may not be able to access health insurance and may also experience food insecurity, housing instability, and poor work environments, all of which have complex effects on many aspects of health.

One overarching goal of Healthy People 2030, an initiative by the U.S. Department of Health and Human Services, relates specifically to SDOH: “Create social, physical, and economic environments that promote attaining the full potential for health and well-being for all.” The program focuses on helping more people achieve economic stability through employment programs, career counseling, and provision of high-quality child care options, as well as through policies to help individuals secure quality food and stable housing and access health care and education.

Education Access and Quality

Higher education is strongly associated with improved health outcomes, positive health behaviors, and increased life expectancy. Early childhood education and primary and secondary education are key determinants of future health; therefore, addressing disparities in education access and quality as early as possible in life is critical.

Poor health literacy is associated with poor medical adherence, decreased utilization of preventive services, and increased mortality. When educational material is given to patients, it is necessary to understand the health literacy level of the target population and tailor this material accordingly.

Neighborhood and Built Environment

The neighborhood and built environment in which individuals live, learn, work, and play have a direct impact on health and well-being. High rates of crime and violence; unsafe air or water; poor walkability; and limited access to healthful food options, parks, playgrounds, healthy

work environments, or transportation are some of the numerous factors that can negatively affect health outcomes. The Area Deprivation Index (ADI) is a metric derived from 17 U.S. census variables—including education, employment, income, household characteristics, and housing—to assess the level of socioeconomic disadvantage by neighborhood.



Ophthalmic considerations.

In underserved urban communities, patients with a high school education or less are significantly less likely to have had a recent eye examination compared with those with greater than a high school education. They are also more likely to report difficulties with insurance and transportation and lack of knowledge as barriers to eye care.

A recent study by Yusuf and colleagues found that living in more disadvantaged neighborhoods, as measured by the ADI, is associated with nonadherence to first-time ophthalmology referrals for diabetic retinopathy screenings.

Yusuf R, Chen EM, Nwanya K, Richards B. Neighborhood deprivation and adherence to initial diabetic retinopathy screening. *Ophthalmol Retina*. 2020;4(5):550-552.

Social and Community Context

Social, family, and community networks serve as important support systems for individuals and thus can significantly affect health outcomes. Factors such as civic participation, social cohesion, and community engagement can have positive health effects by reducing stress. Community engagement by health care providers may improve patient-provider relationships and build trust among patients. Research indicates that when patients and physicians are of the same ethnicity, patients report greater satisfaction with their treatment and improved communication. Although recent U.S. census data show that underrepresented minority groups make up 30.7% of the U.S. population, only 6% of practicing ophthalmologists are from these groups. Increasing the diversity of the ophthalmologic workforce may help improve patient outcomes for underserved populations.

Discrimination and Social Determinants of Health

Discrimination is a socially structured action resulting in the unfair treatment of individuals or groups based on their ethnicity, gender, sexual orientation, age, disability, religion, or other factors. This discrimination can significantly affect the health of different population groups, including ethnic minority groups; women; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) individuals; older adults; and individuals with disabilities.

Ethnicity

Discrimination based on ethnicity, one

Don't Miss These DEI Events

One factor that contributes to health care disparities is the lack of diversity within the physician workforce. Several of this year's events explore that problem, along with other issues that are related to diversity, equity, and inclusion (DEI).

FRIDAY

Diversity, Equity, and Inclusion in Retina (event code Ret03). *Presenter: Julia A. Haller, MD.* This presentation takes place as part of Retina Subspecialty Day. **When:** 9:36-9:42 a.m. (as part of Section II: Public Health, Education, and the Business of Retina, 9:06-9:52 a.m.). **Where:** The Great Hall.

SATURDAY

Diversity and Inclusion in the Ophthalmic Practice (272). *Senior instructor: Patricia Morris, MBA, COE.* Diversity in the workplace carries a host of benefits for health care employers, their staff, and their patients. But diversity is not something that can be created overnight. It requires a leadership dedicated to increasing cultural awareness and inclusion. It requires coworkers who are willing to take the time to learn about each other. It means being willing to identify and address personal biases. And it means physicians and staff boldly opening up to discomfort for the greater good of patients. This course suggests strategies to overcome bias and achieve inclusion. **When:** 3:45-5:00 p.m. **Where:** Room 211.

SUNDAY

Researching Eye Health Care Equity Amidst Workforce Disparity (Sym23). *Chairs: Anne Louise Coleman, MD, PhD, and Angela R. Elam, MD.* The epidemiology of the major eye diseases and their impact on vision demonstrates significant variation by ethnicity and socioeconomic status in the United States. Similarly, the access to and availability of eye care is different in communities across our country. Projections indicate that without changes in the present approach, visual impairment—including that due to refractive error—will increase by 2050. This symposium provides insights into the current state of, and possible actions to improve, visual health disparities, access to care, the relationship of workforce diversity to disparities, and the needs for education of the public, patients, and the profession. A framework for present and future action to utilize data sources, including the Academy's IRIS Registry, to measure and continuously improve access and quality eye care is essential to eliminate disparities and inequities in vision health. **When:** 11:30 a.m.-12:45 p.m. **Where:** New Orleans Theater C.

Employee Recruitment and Retention Strategies That Champion Diversity (463). *Senior instructor: Aimee Greeter.* The presenters aim to equip attendees with useful and practical methods to recruit and retain diverse employees successfully. This interactive presentation 1) focuses on actionable strategies to champion diversity and inclusion in both physician and nonphysician employee and executive selection and retention, 2) relays firsthand examples from female and diverse health care constituents about what equitable opportunities, sponsorship, and promotion have meant for their careers and how they now apply their lessons learned, and 3) discusses employment laws and compliance with applicable employment laws while recruiting employees from diverse backgrounds. **When:** 3:45-5:00 p.m. **Where:** Room 214.

MONDAY

Diversity, Equity and Inclusion: Perspectives From Ophthalmology Leadership (Sym39). *Chairs: Usiwoma E. Abugo, MD, and Nikisha Q. Richards, MD.* Ophthalmology departments remain among the least diverse clinical departments at U.S. medical schools. What should the profession be doing to address this lack of diversity among ophthalmologists and their support staff? This symposium brings together ophthalmology chairs, residency program directors, and leaders of the specialty's professional organizations in a roundtable. *Cosponsored by the National Medical Association (NMA) Ophthalmology Section.* **When:** 11:30 a.m.-12:45 p.m. **Where:** La Nouvelle Orleans AB.

Achieving Health Equity in Glaucoma Care (Sym42). *Chairs: Yvonne Ou, MD, and Angela R. Elam, MD.* Growing evidence demonstrates the unequal impact of COVID-19 on ethnic minorities, including Black and Latinx Americans. Unfortunately, the burden of glaucoma in the United States also reflects the disproportionate impact of glaucoma on ethnic minorities. As such, is it imperative that ophthalmologists and eye care providers understand the impact of social determinants of health, recognize inequities in care, strive to follow best practices in medical education and clinical guidelines of care, and learn about innovative and nontraditional models of care delivery. *Cosponsored by Prevent Blindness.* **When:** 2:00-3:15 p.m. **Where:** Room 243.

definition of *racism*, is a major driver of SDOH and results in significant disparities in health outcomes for minority groups. In 2020, the American Medical Association adopted a policy that recognizes racism as a public health threat, and the organization committed to actively working to dismantle racist policies and practices across all of health care. Racism exists in different forms (e.g., internalized, interpersonal, systemic), can manifest in various ways (e.g., stereotypes, beliefs), and can be intentional or unintentional.

The effects of ethnicity and ethnic discrimination on SDOH are complex, multidimensional, and interrelated. For example, in the United States, ethnic minority groups are disproportionately affected by poverty (SDOH: economic stability). Individuals affected by poverty are more likely to have lower levels of education (SDOH: education). They are also more likely to live in neighborhoods with high rates of crime (SDOH: social and community context) and poor access to resources such as nutritious foods, safe outdoor spaces for exercise, and clean water (SDOH: neighborhood and built environment). All of these factors adversely affect health, quality of life, and health outcomes.

Gender

Gender is a social construct that refers to the roles and expectations attributed to men and women in society and evolves with time. The World Health Organization recognizes that gender is an important factor affecting SDOH, as gender inequality leads to health risks for women globally, and unbalanced power relations between men and women affect health-seeking behavior and health outcomes.

Sexual Orientation and Gender Identity

Research has demonstrated that LGBTQ+ individuals experience worse health outcomes than heterosexual individuals, and they have high rates of mental illness and substance abuse, beginning in adolescence. Factors such as societal stigma and harassment, lack of cultural competency among health care providers, and low rates of insurance coverage together contribute to the overall health burden in this population. LGBTQ+ individuals who are members of ethnic minority groups face even greater health disparities.

Age and Disability

Older adults and individuals with disabilities are particularly vulnerable to discrimination and its consequences. Older adults are more susceptible to illness and chronic disease with aging, but many face considerable barriers such as limited income and physical and cognitive limitations, in addition to discrimination. Adults with disabilities are more

likely than those without disabilities to report their health to be fair or poor and to report higher rates of obesity, lack of physical activity, and smoking.

Approaches to Address Social Determinants of Health

Ophthalmologists can play an important role in addressing SDOH in vulnerable patient populations. Various strategies can be used:

Assess the impact of SDOH in patients' lives as part of every patient encounter. Similar to the way that the history of the present illness, medical/ocular history, and other patient information are obtained, ophthalmologists and their health care teams can assess the role of SDOH in the lives of their patients, how SDOH might affect patient health, and how health care can more effectively be provided. A suggested screening tool, provided by the American Academy of Family Physicians, is available at www.aafp.org/dam/AAFP/documents/patient_care/everyone_project/hops19-physician-guide-sdoh.pdf.

Address biases in your practice. How are people of a lower socioeconomic status or lower education or literacy level viewed? By acknowledging potential bias, ophthalmologists can work to mitigate the effects it may have on patient care. Consider taking an Implicit Association Test (implicit.harvard.edu) to illuminate your own unconscious bias.

Provide patient-centered care based on the principles of empathy, curiosity, and respect. Consider the patient's culture and the possible roles of communication styles; mistrust and prejudice; family dynamics and decision-making; traditions, customs, and spirituality; and sexual orientation and gender issues.

Integrate patient social support structures into your practice. Empower other members of your team to identify and address SDOH. Provide support such as parking or transportation vouchers.

Improve access to care and quality of care. This includes strategies such as improving patient-physician communication and patient health literacy and reducing cultural and linguistic barriers (see the section Health Care Access and Quality on page 18).

It may be helpful to do a quality assurance assessment of your practice to identify any disparities in the care being provided to patients.

Sources

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Elam AR, Lee PP. High-risk populations for vision loss and eye care underutilization: a review of the literature and ideas on moving forward. *Surv Ophthalmol.* 2013;58(4):348-358.
Goyal A, Richards C, Patel V, et al. The Vision Detroit project: visual burden, barriers, and access to eye care in an urban setting. *Ophthalmic Epidemiol.*

What's New With BCSC's 2021-2022 Edition

The 13 volumes of the *Basic and Clinical Science Course (BCSC)* include three major revisions:

- **Section 5: Neuro-Ophthalmology**
- **Section 8: External Disease and Cornea**
- **Section 13: Refractive Surgery**

The other 10 volumes have undergone minor revisions, which range from slight corrections to critical new information that can't wait for a volume's next major revision.

Browse the new edition. Visit the Academy Resource Center (Hall G, Booth 4039) to browse the newest edition of the *BCSC* and explore the Academy's full range of resources (see the Sunday/Monday issue, pages 10-11).

Hear from the BCSC editors. On Saturday, two instruction courses will be presented by the physician volunteers who edited some of the recent major revisions to *BCSC*.

Basic and Clinical Science Course (BCSC) 5 Neuro-Ophthalmology Major Revision Course (event code 245). Senior instructor: M. Tariq Bhatti, MD. The *BCSC Section 5* has undergone a major revision of content pertaining to specific disorders that may be encountered by both general and specialized ophthalmologists. This course highlights and provides an overview of several important neuro-ophthalmic topics, including OCT, acute retinal ischemia, optic neuritis, idiopathic intracranial hypertension, eye movement disorders, facial nerve dysfunction, neurology of the pupil, higher cortical visual disease, functional neurological symptom (conversion) disorder, and giant cell arteritis. **When:** Saturday, 11:30 a.m.-12:45 p.m. **Where:** Room 338.

Current Topics in Cornea and External Disease: Highlights of the BCSC 8 (275V). Senior instructor: Robert W. Weisenthal, MD. Present and past editors of the *BCSC Section 8* book provide a comprehensive update on cornea and external disease. They will explain a systematic methodology for diagnosing and treating dry eye. You also will learn how to recognize and apply appropriate treatment to common infectious, neoplastic, and immune-related diseases. They also will get you up to speed on corneal dystrophies, including the second edition of the IC3D classification and recent developments in genetics, and they will discuss the roles of collagen cross-linking and the different keratoplasty procedures for treating corneal disease. The presenters also will review simple, effective in-office procedures to treat common ocular surface conditions. **Where:** Virtual.

New chapter for 2022-2023. The "Social Determinants of Health" chapter does not appear in the 2021-2022 edition of *BCSC*. It will be included with *Section 1* of the 2022-2023 edition. In the meantime, you can read it in this issue of *AAO 2021 News* and also download it from the Diversity, Equity, and Inclusion section of the Academy website. First go to aao.org/diversity-equity-and-inclusion and then click on "Academy Publications and Articles."

Bookmark the Academy's DEI Page

The Academy has committed to nurturing an inclusive ophthalmologist community that optimally meets the complex eye care needs of a diverse patient population. In keeping with that commitment, the Academy launched a Diversity, Equity, and Inclusion section on its website in April.

This section has a wide range of resources for ophthalmologists, including information about two Academy task forces—one focusing on the Academy's organizational diversity and inclusion, the other focusing on disparities in eye care.

You also will find information about the Minority Ophthalmology Mentoring program, resources for residents, relevant Academy articles, and links to diversity and inclusion education materials, videos, and blog posts from the Academy, as well as links to resources from other medical organizations.

Learn more at aao.org/diversity-equity-and-inclusion.

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Meeting Veterans' Top Tips, Part 1: From Comfort Zones to After Parties

Want to make the most of AAO 2021? Three meeting veterans share their top tips and warn you about some of the biggest mistakes that attendees commonly make.

Samuel Masket, MD, Bansari Mehta, MHA, and Andrea A. Tooley, MD, look back at their AAO experiences and discuss how their meeting strategies have evolved.

Dr. Masket—Looking Forward to His 48th Annual Meeting

In 1977, Samuel Masket, MD, founded an anterior segment practice in Los Angeles. Last year, at the outset of the COVID-19 public health emergency, he stopped seeing patients due to the risk that the virus posed to older physicians. During the past decades, he attended 46 Academy annual meetings; last year's all-virtual meeting was his 47th; and AAO 2021 will be his 48th.

My first annual meeting—1974. I attended my first Academy annual meeting in 1974 in Dallas and was beyond overwhelmed. It left such an impression that I have not missed one since!

My top tip for getting the most out of the meeting—have a limited, but specific, learning goal.

The Academy annual meeting can be daunting, with so many activities occurring simultaneously. You can easily feel as though you are always in the wrong place. I think that it's best to approach each meeting with a limited but specific goal for learning and take courses or attend lectures related to just a few subjects. Don't forget to leave time for the Opening Session and for nonclinical matters.

Biggest beginner's mistake—kid-in-the-candy-store syndrome. There is so much to see and learn. Trying to take it all in like a child with a free pass to a candy store is a common error for new attendees. Set yourself limited goals for learning, but be sure to leave time to visit the exhibit hall and view innovative technologies.

How the annual meeting has changed—the growth of Subspecialty Day and Cataract Monday. A major change is the

evolution of the Subspecialty Day programs. In prior years the instructional courses filled the bill for learning in specific clinical arenas. The new paradigm allows concentrated and specific learning in a narrower time frame. That said, related instructional courses are less busy as a result.

In addition to Subspecialty Day, Cataract Monday offers comprehensive and specific learning in a single time setting. I have had the pleasure and privilege to participate in the Cataract Spotlight program over time and find it to be a personal highlight and an excellent learning experience.

My most rewarding experience at the AAO—a New Orleans double!

On a very personal note, I have had the honor of presenting the Binkhorst Lecture in 1998 and the Kelman Lecture in 2013; interestingly, both meetings were held in New Orleans.

Virtual meetings versus in-person meetings—eager to catch up with old friends. As a Senior Ophthalmologist [SO; Academy members aged 60 or older], I have made many friends from diverse locations over time. The annual meeting allows me to reunite and catch up. It

also gives one a snapshot of the evolution of our leadership. It's a wonderful opportunity to measure and appreciate your place in the life cycle of ophthalmology.

All of that was taken away from me last year.

Ms. Mehta—Use the Meeting to Expand Your Support Network

Bansari Mehta, MHA, is Director of Operations for Eye Associates of Southern Indiana, which has multispecialty locations across Indiana and Kentucky for 20 doctors and 175 staff. She serves on the American Academy of Ophthalmic Executives (AAOE) Content Committee and completed the AAOE's Ophthalmic Practice Administrators Leadership



A PERSONAL HIGHLIGHT. Dr. Masket and family after he had presented the 2013 Charles D. Kelman Lecture, "25 Years of the JCRS Consultation."

Program (OPAL) in 2020.

My first annual meeting—2014. I first attended AAO 2014 in Chicago. Academy meetings are personally hectic for me because I love to make the most of my time by absorbing as much as I can to bring back to our clinics. This keeps me on the go all day, but by the end of the meeting I feel accomplished.

My top tip for getting the most out of AAO 2021—step out of your comfort zone. Don't be shy. I have realized that as administrators we can be extremely

confident and comfortable within our area of expertise, but some people get overwhelmed by the magnitude of the meeting and keep to themselves. I encourage everyone to step out of their comfort zone, introduce themselves to strangers, and connect. You will end up making a lot of friends, who will in no time become your professional life support system.

How the AAOE program helps me stay current—it is my annual boot camp.

The meeting has evolved meaningfully over the last few years. The AAOE's grand opening session, master classes, and regular courses keep me updated on trending topics. I personally enjoy the leadership classes and look at the annual meeting to be a boot camp for my educational needs. The plethora of courses offered makes me want to be in two places at the same time! But by scrutinizing the schedule and flagging

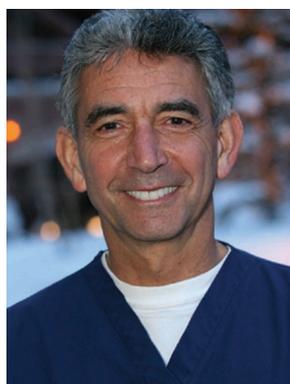
events that will leverage my knowledge base, I can stay on track and avoid feeling overwhelmed.

My meeting strategy has evolved—the speakers at the podium aren't the only ones with practice management pearls. Early on, I was focused on speaker courses. But with time, I realized that it also is extremely valuable to make sure you talk and exchange notes with your fellow attendees. The wisdom and knowledge that they have to impart will also help you to address some of your own

practice issues. It's like we almost have the same practice management-related stories and experiences. I now make some time to connect with people on a much deeper level while hanging out in the AAOE Lounge—I look at it as investing in my growth as a professional.

My favorite way to spend an evening at the annual meeting—the AAOE Reception. AAOE Reception night is one of my favorite after-hours

sessions of the meeting [see "Reconnect at AAO 2021," next page]. This is the night that practice administrators from all over the country come together under one roof and network. I love being able to connect with old and new administrator friends, listening and sharing tips and tricks to handle anything that is thrown our way daily. The strength, expertise, and energy under that roof, on that night, are tremendous.



DR. MASKET: "After last year's all-virtual meeting, AAO 2021 allows me a chance to reunite and catch up with many friends in ophthalmology."



MS. MEHTA: "I look at the annual meeting to be a boot camp for my educational needs."



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aao.org/museum

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FROM COLLEAGUE TO COLLEAGUE
AAO EXPERIENCES

Dr. Tooley—Plan, Present, Dance (Then Repeat Next Year)

Andrea A. Tooley, MD, is an oculoplastic surgeon at Mayo Clinic in Rochester, Minnesota. She did her ophthalmology residency at Mayo Clinic (2015-2018) and completed an American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS) fellowship in New York City (2018-2020).

My first annual meeting—2015. I attended my first annual meeting when I was a first-year resident. I remember being completely overwhelmed by all the exhibits and the extensive program list. Luckily, I found the Young Ophthalmologist [YO] Lounge and was able to meet some great YOs who recommended events for first-year residents. I also attended Cornea Subspecialty Day, which was extremely high yield and educational for me as I was just starting to see complex cornea patients in clinic.

My top tip for getting the most out of the meeting—plan, plan, plan! Use the Mobile Meeting Guide [aao.org/mobile] and flag sessions you want to see.

My most rewarding experience at the AAO—being a panelist at a YO symposium. An experience that I will never forget was presenting on stage for a 2019

YO Symposium alongside tremendous leaders in ophthalmology, like Purnima Patel, Peter Karth, R.V. Paul Chan, Marie Louise Rasmussen, Brian Stagg, and Luxme Hariharan.

My most serendipitous moment—running into a mentor. When I attended my first annual meeting, I ran into



DR. TOOLEY: "When I felt overwhelmed at my first meeting, colleagues at the YO Lounge helped get me on track."

Dr. Hunter Cherwek, someone who immensely influenced my decision to pursue ophthalmology. Dr. Cherwek had been the medical director of ORBIS when I was a volunteer in high school. I hadn't seen him in nearly 10 years! Running into him at the annual meeting and letting him know I had made it and was officially an ophthalmology resident was such a highlight of my meeting that year!

My guilty pleasure at the annual meeting—dancing the night away.

The Orbital Gala and the YO party are my favorite events at the annual meeting. I love seeing all my friends at the Orbital Gala and then dancing the night away at the YO after party. Too much fun!

CONGRATULATIONS! The Orbital Gala's remote option enables Dr. Tooley to join the celebrations while being with her infant daughter, born Sept. 8.

Reconnect at AAO 2021

ATTEND A RECEPTION.

This year's receptions include the following:

OphthPAC Reception.

If you are a 2021 OphthPAC invested member, the Academy would like to thank you for your support. Join your colleagues for an evening of celebration. **When:** Saturday, 6:00-7:30 p.m. **Where:** Westin New Orleans.

AAOE Reception. If you are an AAOE member, come and put some faces

to the names that you see on the AAOE-Talk online community. **When:** Saturday, 5:30-7:00 p.m. **Where:** New Orleans Marriott.

Orbital Gala. While it is too late to buy tickets for this year's in-person gala, you can still attend online (aao.org/gala). **When:** Sunday, 6:00-8:00 p.m. **Where:** House of Blues (if you have a ticket) or online.

YO Reception. Academy members who are in training or in their first five years of practice are encouraged to attend this year's YO Reception. **When:** Sunday, 9:00 p.m.-midnight. **Where:** Visit aao.org/yo for venue information.

ENJOY THE LOUNGES. Spare some time to relax and network:

- **AAOE Lounge:** Room 201
- **Senior Ophthalmologist (SO) Lounge:** Room 224
- **Young Ophthalmologist (YO) Lounge:** Room 222
- **EyePlay Experience:** Hall H, Booth 5214



DANCING THE NIGHT AWAY. Dr. Tooley (front, middle) and friends at a 2019 YO reception.

Did You Attend Subspecialty Day? Extend Your Learning!

If you attended a Subspecialty Day meeting and especially enjoyed a particular session and want to learn more, the Academy can help.

Go deep on MIGS. Let's say, for example, you enjoyed the Glaucoma Subspecialty Day session about microinvasive glaucoma surgery (MIGS). You can take advantage of courses on the topic here in New Orleans and/or continue your education at home.

AAO 2021

While you are in New Orleans, check out these MIGS courses.

MIGS: Devices and Incisional Techniques (event code Lec121). Course director: Steven R. Sarkisian, MD. *When: Saturday, 2:00-3:15 p.m. Where: Room 333.*

MIGS: Devices and Incisional Techniques (Lab121A). Course director: Steven R. Sarkisian, MD. *When: Sunday, 8:00-10:00 a.m. Where: Room 353.*

Subconjunctival MIGS: Implantation and Revision Techniques (606). Senior instructor: Keith Barton, MBChB. *When: Monday, 8:00-9:15 a.m. Where: Room 338.*

GATT: Basic Technique, Surgical and Postoperative Pearls and Review of Outcomes Data (622V). Senior instructor: Davinder S. Grover, MD. *Where: Virtual.*

ONE Network

The ONE Network (aao.org/clinical-education) offers educational webinars, videos, quizzes, and more. As part of the ONE Network, the David E.I. Pyott Glaucoma Education Center (aao.org/glaucoma) provides an entrée to the network that's curated specifically for those interested in glaucoma topics. Through the Pyott Center and on the ONE Network, you'll find the following resources (among many others):

Videos. A multitude of MIGS videos is discoverable with a Search on "MIGS" and filtering by Multimedia/Video. Video types include:

- Short interviews from recent meetings. For example, there's a 3.5-minute interview from ASCRS 2021 about MIGS for comprehensive ophthalmologists (Fig. 1, aao.org/interview/migs-for-comprehensive-ophthalmologists).
- Basic surgical skills videos for specific devices. For example, there's a video about iStent, aao.org/basic-skills/istent-trabecular-micro-bypass-surgery.
- Clinical and surgical videos. Among many videos in this category, you will find, for example, "Management of Nonfiltrating XEN Gel Stent" (aao.org/

[clinical-video/management-of-nonfiltrating-xen-gel-stent](#)).

- "Master Class in MIGS" is a series of more than a dozen videos detailing surgical specifics about various MIGS devices (Fig. 2, aao.org/master-class-video/istent-implantation).

Disease Reviews. For those interested in MIGS for pediatric patients, "Microinvasive Glaucoma Surgery in Childhood Glaucoma" may provide insight (aao.org/disease-review/micro-invasive-glaucoma-surgery-in-childhood-glauc).

Webinars. The Academy's webinar titled "Update on Glaucoma for Non-specialists" (June 2021) kicks off with a MIGS update from Anna Junk, MD (aao.org/annual-meeting-video/2021-update-on-glaucoma-non-specialists). Another MIGS webinar "Expert Insights: MIGS Algorithms" took place in May 2020 (Fig. 3, aao.org/annual-meeting-video/expert-insights-migs-algorithms).

Diagnose This! Quick quizzes in myriad topics include one on MIGS, titled "Diagnose This: Best Surgical Candidate for Minimally Invasive Glaucoma Surgery" (Fig. 4, aao.org/diagnose-this-player/diagnose-this-best-surgical-candidate-minimally-in).

Learning Plans. Oluwatosin U. Smith MD, wrote a learning plan titled "Optimizing MIGS and Other Glaucoma Procedures," which offers CME credit (aao.org/learning-plan-detail/optimizing-migs-other-glaucoma-procedures-copy).

EyeWiki

The wiki for all conditions ophthalmic has an entry for MIGS, of course. It is available at [eyewiki.org/Microinvasive_Glaucoma_Surgery_\(MIGS\)](http://eyewiki.org/Microinvasive_Glaucoma_Surgery_(MIGS)).

Publications

And don't forget to check *Ophthalmology* journal (aaojournal.org), *Ophthalmology Glaucoma* (www.ophtalmologyglaucoma.org by subscription), and *EyeNet* Magazine (aao.org/eyenet) for the latest articles on MIGS and other topics—glaucoma and otherwise.

Check out *EyeNet's* two-part roundtable on MIGS. Part 1 is titled "Precision Glaucoma Management With MIGS" (Fig. 5, aao.org/eyenet/article/precision-glaucoma-management-with-migs) and part 2 is titled "Selecting the Right MIGS" (aao.org/eyenet/article/md-roundtable-part-2-selecting-the-right-migs).

Learn more about these and other Academy offerings at the Resource Center (Hall G, Booth 4039).



APR 12, 2019

2 Kahook Dual Blade Goniotomy

By Iqbal K Ahmed MD, Georges M Durr, MD, Devesh K Varma MD

01:42
Glaucoma, IOP and Aqueous Flow, Surgical Management

In this video from the Master Class in Minimally Invasive Glaucoma Surgery (MIGS), Dr. Ike Ahmed performs a goniotomy with a Kahook Dual Blade®.

Master Class in Minimally Invasive Glaucoma Surgery (MIGS)

- iStent
- iStent Inject
- Hydrus
- Viscocanalostomy
- Goniotomy

Goniocopy-assisted Transluminal Trabeculotomy and Viscocanalostomy with iTrack Surgical System
 Goniocopy-assisted Transluminal Trabeculotomy and Viscocanalostomy with OMNI Glaucoma Treatment System
Kahook Dual Blade Goniotomy
 Goniocopy-assisted Transluminal Trabeculotomy with 5-0 Prolene

- XEN
- SIBS Microshunt
- Needling XEN and SIBS Microshunt

3 Expert Insights: MIGS Algorithms

79 WF, Tmax 26 OU, CCT 480/490
IOP 17-19 since starting latanoprost

By Hady Saheb, MD, MPH, Arsham Sheybani, MD, Davinder S Grover MD

2020 Clinical Webinars
01:03:47

4 Diagnose This: Best surgical candidate for minimally invasive glaucoma surgery

Which patient is the best surgical candidate for minimally invasive glaucoma surgery?

- 6-year-old male with secondary glaucoma after trauma and multiple eye surgeries
- 45-year-old diabetic man with neovascular glaucoma and IOP of 42
- 67-year-old man on 2 topical medications who needs cataract surgery
- 72-year-old woman with in angle closure with an IOP of 50 and a large cataract

5 CLINICAL UPDATE

MD Roundtable, Part 1: Precision Glaucoma Management With MIGS

Microinvasive glaucoma surgery, or MIGS, constitutes a broad array of devices and procedures for managing glaucoma. In this first portion of a two-part series, Ahmed, MD, MBA, of the University of Illinois in Chicago, hosts an MD Roundtable with Constantine O. Sheh, MD, MSc, of Virginia Eye Consultants in Norfolk, and Albert S. Khoury, MD, of Rutgers New Jersey Medical School in Newark. The experts discuss how they define and categorize MIGS, their thought processes for selecting a particular procedure, and when they consider employing a "MIGS-plus" modality. Part 2 will appear in the November *EyeNet*.

Defining MIGS
Dr. Ahmed: How do you define MIGS?
Dr. Sheh: MIGS are microinvasive glaucoma surgeries. In the past, we called these types of surgeries "minimally invasive." The microinvasive terminology refers to the lack of conventional tissue disruption and the ab-

invasive is appropriate to reflect the good safety profile and less troublesome post-op period associated with MIGS, compared with traditional glaucoma surgery. I also like to use the phrase "precision glaucoma surgery," which reflects how MIGS enable us to be much more precise in tissue handling.

Ciliary Body MIGS
Dr. Ahmed: Do you consider procedures that ablate the ciliary body—specifically endoscopic cyclophotocoagulation (ECP) and the MicroPulse laser system (Pulsar)—within the scope of MIGS?
Dr. Sheh: An incision needs to be made to perform ECP, so yes, I consider it to be a microinvasive, or microinvasive, glaucoma surgery. The MicroPulse system does not involve an incision, so I think of it as a laser tool rather than as part of the MIGS array.
Dr. Khoury: I find it challenging to

STENT: Some patients with advanced glaucoma have shown favorable results with the stent, according to a 2019 study by Neuhoff.

Dr. Ahmed: I agree I think these ciliary body procedures can be distinguished from other MIGS by the expanded range of glaucoma stages that can be treated.

Choosing a Procedure
Dr. Ahmed: What is your thought process for selecting MIGS procedures?
Dr. Sheh: I use somewhat of an algorithm to MIGS selection. I first want

Best of Show at AAO 2021: 4 Must-See Videos

Out of the 34 scientific videos viewable during AAO 2021, these four were selected as Best of Show. They cover cornea, external disease; glaucoma; and retina, vitreous.

The 2021 Best of Show winners have provided descriptions, below, of what you can learn from watching their videos. All of this year's videos are accessible, on demand, through AAO 2021 Virtual and through the Mobile Meeting Guide, aao.org/mobile.

CORNEA, EXTERNAL DISEASE Selective Endotheliectomy in Peters Anomaly (V10)

Selective endotheliectomy in Peters anomaly (SEPA) while preserving the host Descemet membrane is a relatively new technique for managing a select group of children with PA. In this video, we describe the technique's long-term clinical outcomes.

The video also highlights indications, the timing of surgery and surgical procedure, intraoperative challenges, and postoperative care. SEPA is a safe, effective technique in select cases of posterior corneal defect due to PA. This could potentially be a novel surgical alternative to reduce the need for full-thickness keratoplasty.

Senior producer: Muralidhar Ramappa, MD. Coproducers: Sunita Chaurasia, MD; Anil Kumar Mandal; Deepak Paul Edward, MD.

GLAUCOMA Xen Resuscitation 101 (V15)

The Xen45 Gel Stent is a useful tool in today's armamentarium of minimally invasive glaucoma surgery. But subconjunctival scarring and encapsulation can cause failure of this bleb-forming procedure. In this video, we demonstrate the surgical technique of bleb needling and revision, which is critical to ensuring good long-term outcomes.

Bleb needling should be considered when the target IOP is not reached and the Xen45 is immobile, the bleb is flat, or there is encapsulation. Needling may be performed at the slit lamp or in the operating theater. However, care must be taken not to transect the Xen45. In addition, it is important to visualize a straight and mobile Xen45 at the end of the needling.

If the IOP remains suboptimal despite multiple needling attempts, open con-

junctival revision should be considered. A fibrotic sock is often found encasing the Xen45, requiring careful dissection and removal. The internal lumen of the Xen45 should be examined intraoperatively. Patency of the Xen45 can be ensured by various means before closing the conjunctiva. Both bleb needling and open conjunctival revision should be augmented by antimetabolite therapy.

Senior producer: Bryan C.H. Ang, MD.

RETINA, VITREOUS Mastering Sutureless Cannula-Based Scleral IOL Fixation (V27)

Precursory techniques for scleral fixation of an IOL can be cumbersome and may be affected by suture erosion or IOL dislocation. Recently, Dr. Shin Yamane described a sutureless approach in which the IOL is secured within the scleral walls by flanging the haptic tips.

In this video, we demonstrate a step-by-step modification of his sutureless scleral-fixation technique wherein the haptics are externalized through trocar cannulae rather than through needles.

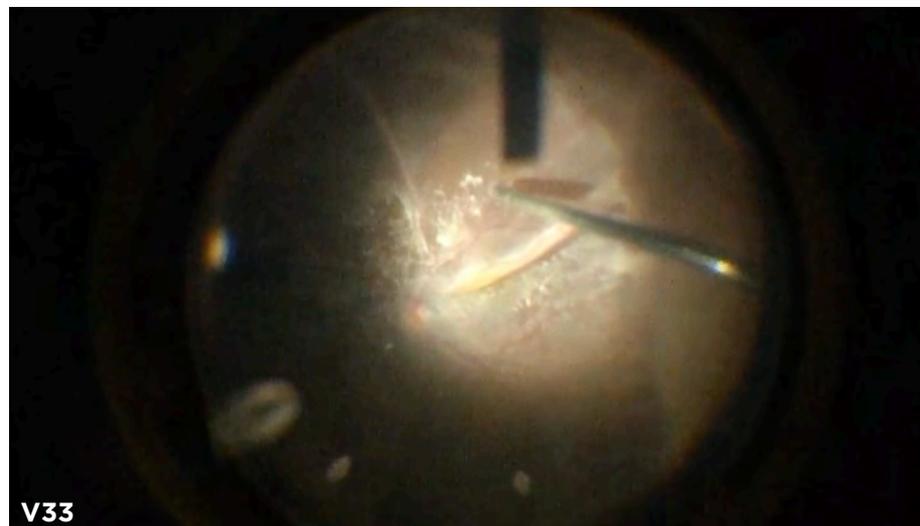
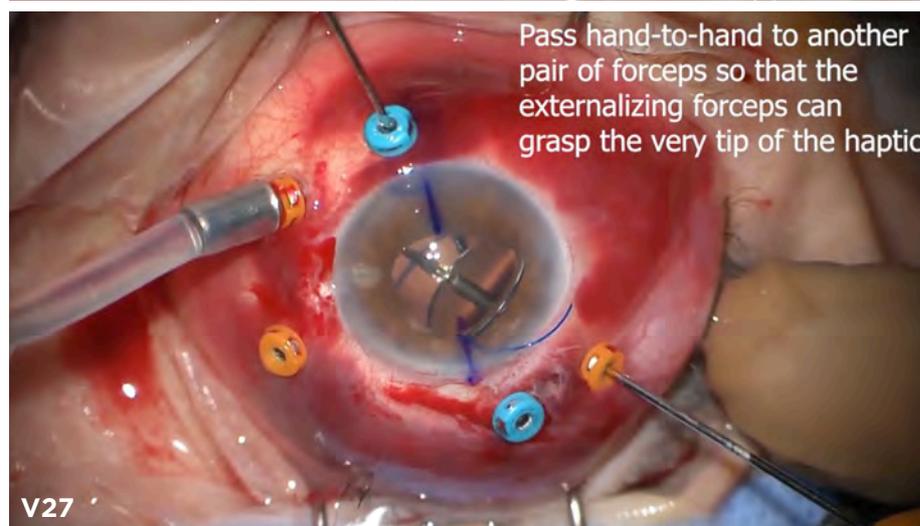
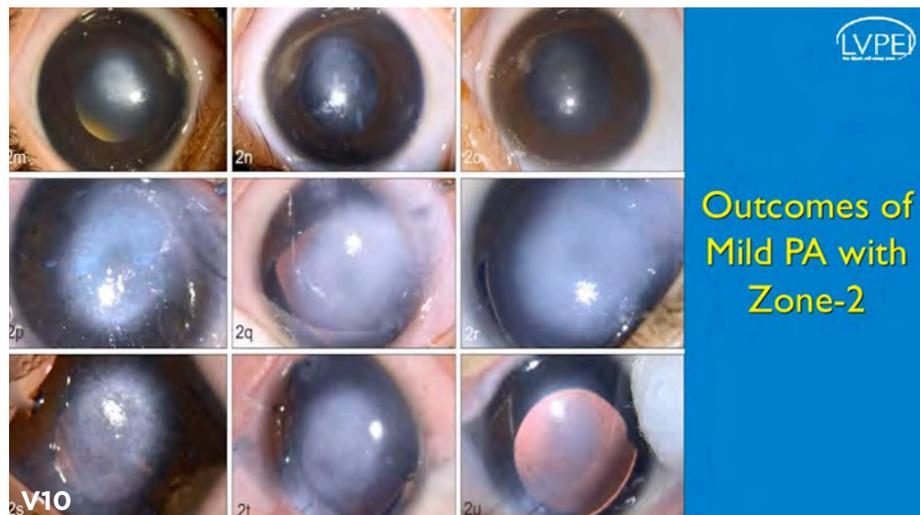
Senior producer: Christina Y. Weng, MD, MBA.

RETINA, VITREOUS Trochar Choroidal Drainage (V33)

In this video, we introduce the case of a 36-year-old man with keratoconus and a penetrating keratoplasty (PKP) with recent suture removal who sneezed and suddenly lost vision in his right eye. His vision was light perception, his PKP was dehisced, and his crystalline lens had been expelled. B-scan showed large serous choroidal detachment and retinal detachment.

A 6-mm trochar was inserted and infusion pressure was raised to 60 mm Hg. After a radial incision on the sclera was made 8 mm from the limbus, no egress of choroidal fluid was noted. The superotemporal trochar was inserted and straw-colored choroidal fluid drained from the sclerotomy. Pars plana vitrectomy, drainage of subretinal fluid, and endolaser were performed. Next, 16% C₃F₈ gas was injected.

Senior producer: Tahira M. Scholle, MD.



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Booth 4323



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**- Dr. Jonathan S. Myers, MD,
Wills Eye Glaucoma Service**

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**375
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- Intravitreal injections, including those with EYLEA, have been associated with endophthalmitis and retinal detachments. Proper aseptic injection technique must always be used when administering EYLEA. Patients should be instructed to report any symptoms suggestive of endophthalmitis or retinal detachment without delay and should be managed appropriately. Intraocular inflammation has been reported with the use of EYLEA.
- Acute increases in intraocular pressure have been seen within 60 minutes of intravitreal injection, including with EYLEA. Sustained increases in intraocular pressure have also been reported after repeated intravitreal dosing with VEGF inhibitors. Intraocular pressure and the perfusion of the optic nerve head should be monitored and managed appropriately.
- There is a potential risk of arterial thromboembolic events (ATEs) following intravitreal use of VEGF inhibitors, including EYLEA. ATEs are defined as nonfatal stroke, nonfatal myocardial infarction, or vascular death (including deaths of unknown cause). The incidence of reported thromboembolic events in wet AMD studies during the first year was 1.8% (32 out of 1824) in the combined group of patients treated with EYLEA compared with 1.5% (9 out of 595) in patients treated with ranibizumab; through 96 weeks, the incidence was 3.3% (60 out of 1824) in the EYLEA group compared with 3.2% (19 out of 595) in the ranibizumab group. The incidence in the DME studies from baseline to week 52 was 3.3% (19 out of 578) in the combined group of patients treated with EYLEA compared with 2.8% (8 out of 287) in the control group; from baseline to week 100, the incidence was 6.4% (37 out of 578) in the combined group of patients treated with EYLEA compared with 4.2% (12 out of 287) in the control group. There were no reported thromboembolic events in the patients treated with EYLEA in the first six months of the RVO studies.

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REGENERON

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777 Old Saw Mill River Road, Tarrytown, NY 10591

EYLEA ACHIEVED RAPID, SUSTAINED OUTCOMES IN DME

Demonstrated efficacy outcomes in VISTA and VIVID, phase 3 anti-VEGF trials in DME (N=862)¹

Mean change in BCVA (ETDRS letters) at Year 1 from baseline^{1-5,*}

	Initial Gains (Month 5)		Primary Endpoint (Year 1)		Prespecified Exploratory Endpoint (Year 3)	
	VISTA	VIVID	VISTA	VIVID	VISTA	VIVID
EYLEA Q4	+10.3 (n=154)	+9.3 (n=136)	+12.5 (n=154)	+10.5 (n=136)	+10.4 (n=154)	+10.3 (n=136)
EYLEA Q8 [†]	+9.9 (n=151)	+9.3 (n=135)	+10.7 (n=151)	+10.7 (n=135)	+10.5 (n=151)	+11.7 (n=135)
Control	+1.8 (n=154)	+1.8 (n=132)	+0.2 (n=154)	+1.2 (n=132)	+1.4 (n=154)	+1.6 (n=132)

P<0.01 vs control at Year 1.

The analyses of these exploratory endpoints were not multiplicity protected and are descriptive only.

Year 2 data was consistent with results seen in Year 1.⁵

VISTA and VIVID study designs: Two randomized, multicenter, double-masked, controlled clinical studies in which patients with DME (N=862; age range: 23-87 years, with a mean of 63 years) were randomized and received: 1) EYLEA 2 mg Q8 following 5 initial monthly doses; 2) EYLEA 2 mg Q4; or 3) macular laser photocoagulation (control) at baseline and then as needed. From Week 100, laser control patients who had not received EYLEA rescue treatment received EYLEA as needed per re-treatment criteria. Protocol-specified visits occurred every 28 (±7) days.¹

In both clinical studies, the primary efficacy endpoint was the mean change from baseline in BCVA at Week 52, as measured by ETDRS letter score.¹

*Last observation carried forward; full analysis set.

[†]Following 5 initial monthly doses.

SEE WHAT EYLEA COULD DO FOR YOUR PATIENTS WITH DME AT HCP.EYLEA.US

anti-VEGF, anti-vascular endothelial growth factor; BCVA, best-corrected visual acuity; ETDRS, Early Treatment Diabetic Retinopathy Study; Q4, every 4 weeks; Q8, every 8 weeks.

ADVERSE REACTIONS

- Serious adverse reactions related to the injection procedure have occurred in <0.1% of intravitreal injections with EYLEA including endophthalmitis and retinal detachment.
- The most common adverse reactions (≥5%) reported in patients receiving EYLEA were conjunctival hemorrhage, eye pain, cataract, vitreous detachment, vitreous floaters, and intraocular pressure increased.
- Patients may experience temporary visual disturbances after an intravitreal injection with EYLEA and the associated eye examinations. Advise patients not to drive or use machinery until visual function has recovered sufficiently.

INDICATIONS

EYLEA® (aflibercept) Injection 2 mg (0.05 mL) is indicated for the treatment of patients with Neovascular (Wet) Age-related Macular Degeneration (AMD), Macular Edema following Retinal Vein Occlusion (RVO), Diabetic Macular Edema (DME), and Diabetic Retinopathy (DR).

References: 1. EYLEA® (aflibercept) Injection full U.S. Prescribing Information. Regeneron Pharmaceuticals, Inc. August 2019. 2. Korobelnik JF, Do DV, Schmidt-Erfurth U, et al. Intravitreal aflibercept for diabetic macular edema. *Ophthalmology*. 2014;121(11):2247-2254. doi:10.1016/j.ophtha.2014.05.006 3. Brown DM, Schmidt-Erfurth U, Do DV, et al. Intravitreal aflibercept for diabetic macular edema: 100-week results from the VISTA and VIVID studies. *Ophthalmology*. 2015;122(10):2044-2052. doi:10.1016/j.ophtha.2015.06.017 4. Data on file. Regeneron Pharmaceuticals, Inc. 5. Heier JS, Korobelnik JF, Brown DM, et al. Intravitreal aflibercept for diabetic macular edema: 148-week results from the VISTA and VIVID studies. *Ophthalmology*. 2016;123(11):2376-2385. doi:10.1016/j.ophtha.2016.07.032

Please see Brief Summary of Prescribing Information on the following page.

04/2021
EYL.21.03.0211



BRIEF SUMMARY—Please see the EYLEA full Prescribing Information available on HCP.EYLEA.US for additional product information.

1 INDICATIONS AND USAGE

EYLEA is a vascular endothelial growth factor (VEGF) inhibitor indicated for the treatment of patients with:

Neovascular (Wet) Age-Related Macular Degeneration (AMD), Macular Edema Following Retinal Vein Occlusion (RVO), Diabetic Macular Edema (DME), Diabetic Retinopathy (DR).

4 CONTRAINDICATIONS

4.1 Ocular or Periocular Infections

EYLEA is contraindicated in patients with ocular or periocular infections.

4.2 Active Intraocular Inflammation

EYLEA is contraindicated in patients with active intraocular inflammation.

4.3 Hypersensitivity

EYLEA is contraindicated in patients with known hypersensitivity to aflibercept or any of the excipients in EYLEA. Hypersensitivity reactions may manifest as rash, pruritus, urticaria, severe anaphylactic/anaphylactoid reactions, or severe intraocular inflammation.

5 WARNINGS AND PRECAUTIONS

5.1 Endophthalmitis and Retinal Detachments

Intravitreal injections, including those with EYLEA, have been associated with endophthalmitis and retinal detachments [see *Adverse Reactions (6.1)*]. Proper aseptic injection technique must always be used when administering EYLEA. Patients should be instructed to report any symptoms suggestive of endophthalmitis or retinal detachment without delay and should be managed appropriately [see *Patient Counseling Information (17)*].

5.2 Increase in Intraocular Pressure

Acute increases in intraocular pressure have been seen within 60 minutes of intravitreal injection, including with EYLEA [see *Adverse Reactions (6.1)*]. Sustained increases in intraocular pressure have also been reported after repeated intravitreal dosing with vascular endothelial growth factor (VEGF) inhibitors. Intraocular pressure and the perfusion of the optic nerve head should be monitored and managed appropriately.

5.3 Thromboembolic Events

There is a potential risk of arterial thromboembolic events (ATEs) following intravitreal use of VEGF inhibitors, including EYLEA. ATEs are defined as nonfatal stroke, nonfatal myocardial infarction, or vascular death (including deaths of unknown cause). The incidence of reported thromboembolic events in wet AMD studies during the first year was 1.8% (32 out of 1824) in the combined group of patients treated with EYLEA compared with 1.5% (9 out of 595) in patients treated with ranibizumab; through 96 weeks, the incidence was 3.3% (60 out of 1824) in the EYLEA group compared with 3.2% (19 out of 595) in the ranibizumab group. The incidence in the DME studies from baseline to week 52 was 3.3% (19 out of 578) in the combined group of patients treated with EYLEA compared with 2.8% (8 out of 287) in the control group; from baseline to week 100, the incidence was 6.4% (37 out of 578) in the combined group of patients treated with EYLEA compared with 4.2% (12 out of 287) in the control group. There were no reported thromboembolic events in the patients treated with EYLEA in the first six months of the RVO studies.

6 ADVERSE REACTIONS

The following potentially serious adverse reactions are described elsewhere in the labeling:

- Hypersensitivity [see *Contraindications (4.3)*]
- Endophthalmitis and retinal detachments [see *Warnings and Precautions (5.1)*]
- Increase in intraocular pressure [see *Warnings and Precautions (5.2)*]
- Thromboembolic events [see *Warnings and Precautions (5.3)*]

6.1 Clinical Trials 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 other clinical trials of the same or another drug and may not reflect the rates observed in practice.

A total of 2980 patients treated with EYLEA constituted the safety population in eight phase 3 studies. Among those, 2379 patients were treated with the recommended dose of 2 mg. Serious adverse reactions related to the injection procedure have occurred in <0.1% of intravitreal injections with EYLEA including endophthalmitis and retinal detachment. The most common adverse reactions (≥5%) reported in patients receiving EYLEA were conjunctival hemorrhage, eye pain, cataract, vitreous detachment, vitreous floaters, and intraocular pressure increased.

Neovascular (Wet) Age-Related Macular Degeneration (AMD). The data described below reflect exposure to EYLEA in 1824 patients with wet AMD, including 1223 patients treated with the 2-mg dose, in 2 double-masked, controlled clinical studies (VIEW1 and VIEW2) for 24 months (with active control in year 1).

Safety data observed in the EYLEA group in a 52-week, double-masked, Phase 2 study were consistent with these results.

Table 1: Most Common Adverse Reactions (≥1%) in Wet AMD Studies

Adverse Reactions	Baseline to Week 52		Baseline to Week 96	
	EYLEA (N=1824)	Active Control (ranibizumab) (N=595)	EYLEA (N=1824)	Control (ranibizumab) (N=595)
Conjunctival hemorrhage	25%	28%	27%	30%
Eye pain	9%	9%	10%	10%
Cataract	7%	7%	13%	10%
Vitreous detachment	6%	6%	8%	8%
Vitreous floaters	6%	7%	8%	10%
Intraocular pressure increased	5%	7%	7%	11%
Ocular hyperemia	4%	8%	5%	10%
Corneal epithelium defect	4%	5%	5%	6%
Detachment of the retinal pigment epithelium	3%	3%	5%	5%
Injection site pain	3%	3%	3%	4%
Foreign body sensation in eyes	3%	4%	4%	4%
Lacrimation increased	3%	1%	4%	2%
Vision blurred	2%	2%	4%	3%
Intraocular inflammation	2%	3%	3%	4%
Retinal pigment epithelium tear	2%	1%	2%	2%
Injection site hemorrhage	1%	2%	2%	2%
Eyelid edema	1%	2%	2%	3%
Corneal edema	1%	1%	1%	1%
Retinal detachment	<1%	<1%	1%	1%

Less common serious adverse reactions reported in <1% of the patients treated with EYLEA were hypersensitivity, retinal tear, and endophthalmitis.

Macular Edema Following Retinal Vein Occlusion (RVO). The data described below reflect 6 months exposure to EYLEA with a monthly 2 mg dose in 218 patients following central retinal vein occlusion (CRVO) in 2 clinical studies (COPERNICUS and GALILEO) and 91 patients following branch retinal vein occlusion (BRVO) in one clinical study (VIBRANT).

Table 2: Most Common Adverse Reactions (≥1%) in RVO Studies

Adverse Reactions	CRVO		BRVO	
	EYLEA (N=218)	Control (N=142)	EYLEA (N=91)	Control (N=92)
Eye pain	13%	5%	4%	5%
Conjunctival hemorrhage	12%	11%	20%	4%
Intraocular pressure increased	8%	6%	2%	0%
Corneal epithelium defect	5%	4%	2%	0%
Vitreous floaters	5%	1%	1%	0%
Ocular hyperemia	5%	3%	2%	2%
Foreign body sensation in eyes	3%	5%	3%	0%
Vitreous detachment	3%	4%	2%	0%
Lacrimation increased	3%	4%	3%	0%
Injection site pain	3%	1%	1%	0%
Vision blurred	1%	<1%	1%	1%
Intraocular inflammation	1%	1%	0%	0%
Cataract	<1%	1%	5%	0%
Eyelid edema	<1%	1%	1%	0%

Less common adverse reactions reported in <1% of the patients treated with EYLEA in the CRVO studies were corneal edema, retinal tear, hypersensitivity, and endophthalmitis.

Diabetic Macular Edema (DME) and Diabetic Retinopathy (DR). The data described below reflect exposure to EYLEA in 578 patients with DME treated with the 2-mg dose in 2 double-masked, controlled clinical studies (VIVID and VISTA) from baseline to week 52 and from baseline to week 100.

Table 3: Most Common Adverse Reactions (≥1%) in DME Studies

Adverse Reactions	Baseline to Week 52		Baseline to Week 100	
	EYLEA (N=578)	Control (N=287)	EYLEA (N=578)	Control (N=287)
Conjunctival hemorrhage	28%	17%	31%	21%
Eye pain	9%	6%	11%	9%
Cataract	8%	9%	19%	17%
Vitreous floaters	6%	3%	8%	6%
Corneal epithelium defect	5%	3%	7%	5%
Intraocular pressure increased	5%	3%	9%	5%
Ocular hyperemia	5%	6%	5%	6%
Vitreous detachment	3%	3%	8%	6%
Foreign body sensation in eyes	3%	3%	3%	3%
Lacrimation increased	3%	2%	4%	2%
Vision blurred	2%	2%	3%	4%
Intraocular inflammation	2%	<1%	3%	1%
Injection site pain	2%	<1%	2%	<1%
Eyelid edema	<1%	1%	2%	1%

Less common adverse reactions reported in <1% of the patients treated with EYLEA were hypersensitivity, retinal detachment, retinal tear, corneal edema, and injection site hemorrhage. Safety data observed in 269 patients with nonproliferative diabetic retinopathy (NPDR) through week 52 in the PANORAMA trial were consistent with those seen in the phase 3 VIVID and VISTA trials (see Table 3 above).

6.2 Immunogenicity

As with all therapeutic proteins, there is a potential for an immune response in patients treated with EYLEA. The immunogenicity of EYLEA was evaluated in serum samples. The immunogenicity data reflect the percentage of patients whose test results were considered positive for antibodies to EYLEA in immunoassays. The detection of an immune response is highly dependent on the sensitivity and specificity of the assays used, sample handling, timing of sample collection, concomitant medications, and underlying disease. For these reasons, comparison of the incidence of antibodies to EYLEA with the incidence of antibodies to other products may be misleading.

In the wet AMD, RVO, and DME studies, the pre-treatment incidence of immunoreactivity to EYLEA was approximately 1% to 3% across treatment groups. After dosing with EYLEA for 24-100 weeks, antibodies to EYLEA were detected in a similar percentage range of patients. There were no differences in efficacy or safety between patients with or without immunoreactivity.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Risk Summary

Adequate and well-controlled studies with EYLEA have not been conducted in pregnant women. Aflibercept produced adverse embryofetal effects in rabbits, including external, visceral, and skeletal malformations. A fetal No Observed Adverse Effect Level (NOAEL) was not identified. At the lowest dose shown to produce adverse embryofetal effects, systemic exposures (based on AUC for free aflibercept) were approximately 6 times higher than AUC values observed in humans after a single intravitreal treatment at the recommended clinical dose [see *Animal Data*].

Animal reproduction studies are not always predictive of human response, and it is not known whether EYLEA can cause fetal harm when administered to a pregnant woman. Based on the anti-VEGF mechanism of action for aflibercept, treatment with EYLEA may pose a risk to human embryofetal development. EYLEA should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

All pregnancies have a background risk of birth defect, loss, or other adverse outcomes. The background risk of major birth defects and miscarriage for the indicated population is unknown. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2-4% and 15-20%, respectively.

Data

Animal Data

In two embryofetal development studies, aflibercept produced adverse embryofetal effects when administered every three days during organogenesis to pregnant rabbits at intravenous doses ≥3 mg per kg, or every six days during organogenesis at subcutaneous doses ≥0.1 mg per kg.

Adverse embryofetal effects included increased incidences of postimplantation loss and fetal malformations, including anasarca, umbilical hernia, diaphragmatic hernia, gastroschisis, cleft palate, ectrodactyly, intestinal atresia, spina bifida, encephalomeningocele, heart and major vessel defects, and skeletal malformations (fused vertebrae, sternebrae, and ribs; supernumerary vertebral arches and ribs; and incomplete ossification). The maternal No Observed Adverse Effect Level (NOAEL) in these studies was 3 mg per kg. Aflibercept produced fetal malformations at all doses assessed in rabbits and the fetal NOAEL was not identified. At the lowest dose shown to produce adverse embryofetal effects in rabbits (0.1 mg per kg), systemic exposure (AUC) of free aflibercept was approximately 6 times higher than systemic exposure (AUC) observed in humans after a single intravitreal dose of 2 mg.

8.2 Lactation

Risk Summary

There is no information regarding the presence of aflibercept in human milk, the effects of the drug on the breastfed infant, or the effects of the drug on milk production/excretion. Because many drugs are excreted in human milk, and because the potential for absorption and harm to infant growth and development exists, EYLEA is not recommended during breastfeeding.

The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for EYLEA and any potential adverse effects on the breastfed child from EYLEA.

8.3 Females and Males of Reproductive Potential

Contraception

Females of reproductive potential are advised to use effective contraception prior to the initial dose, during treatment, and for at least 3 months after the last intravitreal injection of EYLEA.

Infertility

There are no data regarding the effects of EYLEA on human fertility. Aflibercept adversely affected female and male reproductive systems in cynomolgus monkeys when administered by intravenous injection at a dose approximately 1500 times higher than the systemic level observed humans with an intravitreal dose of 2 mg. A No Observed Adverse Effect Level (NOAEL) was not identified. These findings were reversible within 20 weeks after cessation of treatment.

8.4 Pediatric Use

The safety and effectiveness of EYLEA in pediatric patients have not been established.

8.5 Geriatric Use

In the clinical studies, approximately 76% (2049/2701) of patients randomized to treatment with EYLEA were ≥65 years of age and approximately 46% (1250/2701) were ≥75 years of age. No significant differences in efficacy or safety were seen with increasing age in these studies.

17 PATIENT COUNSELING INFORMATION

In the days following EYLEA administration, patients are at risk of developing endophthalmitis or retinal detachment. If the eye becomes red, sensitive to light, painful, or develops a change in vision, advise patients to seek immediate care from an ophthalmologist [see *Warnings and Precautions (5.1)*].

Patients may experience temporary visual disturbances after an intravitreal injection with EYLEA and the associated eye examinations [see *Adverse Reactions (6)*]. Advise patients not to drive or use machinery until visual function has recovered sufficiently.

REGENERON

Manufactured by:
Regeneron Pharmaceuticals, Inc.
777 Old Saw Mill River Road
Tarrytown, NY 10591

Issue Date: 08/2019
Initial U.S. Approval: 2011

Based on the August 2019
EYLEA® (aflibercept) Injection full
Prescribing Information.

EYL.20.09.0052

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New Thinking in Ophthalmology

10 Honorary Lecturers Preview Their Presentations

The Opening Session and many Academy symposia are capped by an honorary lecture. These informative presentations by leaders in their field are easy to fit into your schedule, as they are usually between 15 and 35 minutes long. The speakers preview their own lectures below and in the Sunday AAO 2021 News. Most of these talks will be presented in person at AAO 2021. Through the virtual program, you can view all the talks on demand, and some lectures will be broadcasted live.

Note: All summaries were written in advance of AAO 2021. At time of press, not all lecture times had been finalized. Be sure to check the Mobile Meeting Guide, accessible at aao.org/mobile, for the most up-to-date information.

FRIDAY, Nov. 12

GLAUCOMA

American Glaucoma Society Subspecialty Day Lecture: *The Use of Mitomycin-C in Traditional and Novel Glaucoma Surgeries*, presented by Michele C. Lim, MD.

When: Friday, 11:17-11:49 a.m., during Glaucoma Subspecialty Day 2021.

Where: La Nouvelle Orleans AB.

“Although minimally invasive glaucoma surgery (MIGS) dominates much of the conversation of glaucoma surgical management, trabeculectomy surgery still reigns as king when striving for low intraocular pressures. In addition, new ‘bleb-forming’ MIGS are emerging as a tool to fill the glaucoma treatment gap between early and advanced glaucoma, and these surgeries rely on the antifibrotic agent mitomycin-C (MMC). Thus, it is still worthwhile for us to understand how the use of MMC evolved and continues to evolve and how it may affect bleb morphology in both traditional and novel glaucoma procedures.

“The enemy of incisional glaucoma surgery success is the body’s own propensity to heal an open wound, and glaucoma surgeons have tried for decades to modify bleb morphology and function. MMC has been used in trabeculectomy surgery since 1990, and the traditional method of intraoperative application is with gel-foam sponges. In the past few years, a newer method of MMC application by injection has become widespread among glaucoma surgeons. Many younger ophthalmologists now train with this technique. This lecture will review the

evolution of wound-healing modulation and present current literature on the efficacy and safety of MMC delivery by injection. We will pay particular attention to how it may affect bleb morphology in trabeculectomy surgery as well as with the newer bleb-forming minimally invasive glaucoma surgeries.”

Glaucoma Subspecialty Day 2021: *Making Glaucoma Care the Big Easy* (Friday, 8:01 a.m.-5:03 p.m.) is organized in conjunction with the American Glaucoma Society.

REFRACTIVE SURGERY

Troutman Award 1: *Biomechanics of LASIK Flap and SMILE Cap: A Prospective, Clinical Study*, presented by Pooja Khamar, MBBS, MS.

When: Friday, 11:15-11:32 a.m., during Refractive Surgery Subspecialty Day 2021.

Where: New Orleans Theater AB.

“Although refractive procedures like LASIK and small incision lenticule extraction (SMILE) are considered safe and both give us predictable outcomes, there is a lot of debate about which procedure is better in terms of wound healing, biomechanics, and long-term outcomes.

“The cap cut in SMILE requires cuts of smaller span (not a near 360-degree flap) in the anterior stroma of the cornea compared to LASIK. Thus, theoretical models suggested that SMILE would have a biomechanical advantage over LASIK. However, clinical investigations have reported mostly similar biomechanical changes after SMILE and LASIK. Therefore, theoretical models and patient measurements haven’t been in complete agreement.

“With this study, we add a new dimension: to look at the intraoperative biomechanics and actual weakening caused by each of the procedures by using a novel analytical model. This is the first study that has attempted to establish the biomechanical differences between the SMILE cap and LASIK flap cut before the cornea undergoes structural change caused by tissue removal.

“This lecture aims to provide insights into wound healing in refractive surgery and the impact on surgical outcomes.”

Refractive Surgery Subspecialty Day 2021: *How Can We Do Better?* (Friday, 8:04 a.m.-5:27 p.m.) is the annual meeting of the International Society of Refractive Surgery.

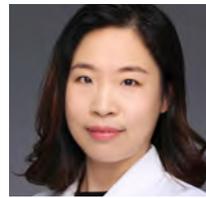
REFRACTIVE SURGERY

Troutman Award 2: *Metabonomic Analysis in Corneal Lenticules From Contact Lens Wearers*, presented by Min Li, MD.

When: Friday, 11:32-11:47 a.m., during Refractive Surgery Subspecialty Day 2021.

Where: New Orleans Theater AB.

“Soft contact lenses are commonly selected to correct refractive errors instead of glasses. But soft contact lenses are foreign



bodies in the eyes. They swim within the tear film, thereby having a direct impact on tear film and tissues, and they have potential side

effects, like dry eye, microbial keratitis, and corneal irregularity. So what happens to the cornea when you wear soft contact lenses for a long time? In this talk, I will tell you the answer.”

Refractive Surgery Subspecialty Day 2021: *How Can We Do Better?* (Friday, 8:04 a.m.-5:27 p.m.) is the annual meeting of the International Society of Refractive Surgery.

RETINA

Charles L. Schepens MD Lecture: *Advanced Retinal Implants: The Abiotic-Biotic Interface Challenges and Opportunities*, presented by Mark S. Humayun, MD, PhD.

When: Friday, 9:52-10:57 a.m., during Retina Subspecialty Day 2021.

Where: The Great Hall.

“Intraocular lens implants are the most common implants in the body and have revolutionized sight restoration in patients with cataracts. Similarly, albeit less prevalent, glaucoma implants, including MIGS implants, are an important part of treatment for



glaucoma. Implants for retinal diseases have been, for the most part, limited to extraocular implants, such as the various types of scleral buckles. Intraocular implants for retinal indications thus far have been for drug delivery. This talk will provide the background and the current state of micro- and nano-scale retinal implants intended to restore and preserve sight. There will be in-depth discussion about two implants, the Argus II and the CPCB-1, and how the devices overcame many interdisciplinary challenges. Time permitting, the talk will also briefly discuss visual cortical implants to restore sight.”

Retina Subspecialty Day 2021: *Emerging Even Stronger* (Friday, 8:00 a.m.-4:00 p.m., and Saturday, 8:00 a.m.-5:30 p.m.) is organized in conjunction with the American Society of Retina Specialists, the Macula Society, the Retina Society, and Club Jules Gonin.

UVEITIS

Jackson Memorial Lecture: *Molecular Diagnostics for Ocular Infectious Diseases*, presented by Russell N. Van Gelder, MD, PhD.

When: Friday, during Sym48, Opening Session.

Where: The Great Hall.

“Infectious disease in the eye is one of the threads that tie all ophthalmologists together, regardless of specialty. My lecture will present the evolution of molecular diagnostic techniques and preview innovations such as use of handheld, point-of-service sequencers being developed in my lab. We are hopeful that soon we will be able to diagnose any ocular infection definitively while the patient is still in the clinic or emergency room. This cutting-edge research could prove to be a game-changer in ocular infectious disease diagnosis.”

Opening Session (5:00-6:30 p.m.).

SATURDAY, Nov. 13

NEURO-OPHTHALMOLOGY

William F. Hoyt Lecture: *Acute Retinal Ischemia: Time for Action!* presented by Valerie Biousse, MD.

When: Saturday, 8:55-9:14 a.m., during Sym05, Infectious Disease in Neuro-Ophthalmology: It’s Not Just COVID-19.

Where: La Nouvelle Orleans C.

“Acute stroke care and secondary prevention of cerebral and cardiovascular disease have dramatically improved over the past 20 years. Access to specialized stroke centers improves outcome and decreases cost. Numerous recent publications have highlighted the need to manage patients with acute retinal arterial ischemia, as is done with those with acute cerebral stroke. Strategies to educate patients and care providers are being developed to facilitate rapid diagnosis and appropriate triage of patients with acute monocular visual loss. Widespread access to nonmydriatic



fundus cameras allows for immediate teleophthalmology diagnosis of acute central retinal artery occlusion, which is the first step toward very early treatment of this devastating condition.”

Infectious Disease in Neuro-Ophthalmology: It's Not Just COVID-19 (8:00-9:15 a.m.) is cosponsored by the North American Neuro-Ophthalmology Society.

OPHTHALMOLOGY AND THE ARTS

Michael F. Marmor, MD, Lecture in Ophthalmology and the Arts: Self-Taught Art vs. the Mainstream, presented by Alice Yelen Gitter, Senior Curator of Collections Research Emerita at the New Orleans Museum of Art.

When: Saturday, 11:30 a.m.-12:30 p.m., during Sym06, Michael F. Marmor, MD, Lecture in Ophthalmology and the Arts.

Where: La Nouvelle Orleans C.

For 35 years, Ms. Gitter was instrumental in developing the New Orleans Museum of Art as an educational as well as artistic



resource for a diverse New Orleans community. Notably, she curated and organized the 1992 exhibition *Passionate Visions of the American*

South: Self-Taught Artists from 1940 to the Present, a groundbreaking exhibition that brought American self-taught art to the public eye. Her talk “Self-Taught Art vs. the Mainstream” will explore the beauty and importance of self-taught artwork.

Michael F. Marmor, MD, Lecture in Ophthalmology and the Arts (11:30 a.m.-12:30 p.m.).

ORGANIZED MEDICINE

Parker Heath Lecture: Health 2047—Trends, Advocacy & IT Solutions, presented by Bobby Mukkamala, MD.

When: Saturday, during Sym43V, *Innovations in Ophthalmology From Around the World: Intra-ocular Implants, Artificial Intelligence, and Solutions to Systemic Problems*.

Where: Virtual.

“What has COVID-19 revealed about the current state of U.S. health care? This talk takes a look at broad trends in U.S. health care and key advocacy issues for physicians and patients that go far beyond COVID-19. It focuses on the ongoing federal and state advocacy efforts of the American Medical Association and partner organizations, including the work to advance digital health in the clinical setting and to ensure physicians have a voice in the design and creation of new technologies that promise to transform the delivery of care.”



Innovations in Ophthalmology From Around the World: Intraocular Implants, Artificial Intelligence, and Solutions to Systemic Problems (3:45-5:00 p.m.) is cosponsored by the American Medical Association Ophthalmology Section Council.

PATHOLOGY/ONCOLOGY

Zimmerman Lecture: Ocular Manifestations of Prion Diseases, presented by R. Nick Hogan, MD, PhD.

When: Saturday, 8:49-9:13 a.m., during Sym02, *Radiation Treatment for*

Ocular and Ocular Adnexal Tumors: Updates for the Ophthalmologist.

Where: New Orleans Theater C.

“The prion protein (PrP) was discovered in 1982 by Dr. Stanley Prusiner at the University of California, San Francisco,



while I was working in his laboratory. Prions represent novel infectious agents and are etiologic in the development and progression of neurologic disease, specifically Creutzfeldt-Jakob disease and kuru in humans and scrapie and mad cow disease (bovine spongiform encephalopathy) in animals. PrP, a misfolded protein, self-replicates without involving DNA or RNA; forms insoluble fibrils; and causes alteration in cell function and structure. This can lead to cell death, and when occurring in critical sites, results in considerable morbidity and can even result in death.

“Prion-induced cellular alterations in the eye and visual pathways manifest significant changes in vision with perturbations in the retina, optic nerve, and visual cortex. Additionally, prion-infected ocular tissues retain infective potential, and transmission of disease has occurred in corneal transplant recipients. This has substantial ramifications for ocular surgery in general, with potential contamination of surgical instruments of concern.

“This lecture will summarize PrP involvement in prion-induced diseases and review the current knowledge of prion pathophysiology relative to the visual system. Tissue infectivity with PrP and the resultant risk of disease transmission will be examined.”

Radiation Treatment for Ocular and Ocular Adnexal Tumors: Updates for the Ophthalmologist (8:00-9:15 a.m.) is cosponsored by the American Association of Ocular Oncology and Pathology.

PEDIATRIC OPHTHALMOLOGY

Marshall M. Parks Lecture: The Importance of the Conjunctiva in Strabismus and Strabismus Surgery, presented by Monte A. Del Monte, MD.

When: Saturday, 10:35-11:00 a.m., during Sym03, *Management of Pediatric Ocular Trauma*.

Where: New Orleans Theater C.

“The conjunctiva plays a significant role in the motility of the globe and circulation to the anterior segment. Thus, while



several factors—including proper evaluation of the anatomy and physiology of the conjunctiva, selection of incision technique,

wound placement, and optimal wound closure—are important to the success of any strabismus procedure, they play a critical role in achieving optimal outcomes of complex strabismus surgical procedures.

“This lecture will discuss recent information concerning conjunctival anatomy and draw on my experience concerning best practices for conjunctival incision and management to improve strabismus surgical success. Of note, this was an interest of Dr. Marshall Parks.”

Management of Pediatric Ocular Trauma (9:45-11:00 a.m.) is cosponsored by the American Association of Pediatric Ophthalmology and Strabismus.

2020 ACADEMY LAUREATE, CONTINUED FROM PAGE 12

fun job I've ever had. It was a pleasure to work closely with razor-sharp people like Andy and Henry Jampel; and Academy Vice President for Education Dale Fajardo, Executive Editor May Piotrowski, and the journal staff are tops.

Of course, I learned a lot in a hurry about contemporary ophthalmic research. It was a seven-day-per-week job, and every single day something came through the inbox that gave me pause—sometimes an amazingly brilliant idea and sometimes something completely nutty or, worse, potentially harmful to patients. But the greatest privilege was working with authors and reviewers and our fantastic editorial board—there are some incredibly smart people out there, which bodes well for ophthalmology's future.

ABO: Past, Present, and Future
Have you made any substantial changes at the ABO? What are your thoughts on future directions in board certification?

The ABO was founded in 1916, and some might argue that we have made

more changes in the past few years than in our first century. And the emphasis here is “we.” The directors of the Board, along with approximately 500 examiners and volunteers, are intensely mission-driven, taking on significant amounts of work to serve both the public (the primary stakeholder) and the profession (through which the public is served).

Several years ago, my predecessor, John Clarkson and the superb ABO office staff began seeking information from the Board's diplomates about how the ABO could better achieve its mission. These great suggestions helped inform some of the directions we have taken, such as sunseting the decennial DOCK examination for Maintenance of Certification and replacing it with a less burdensome longitudinal assessment program, Quarterly Questions.

We are committed to transparency in our policies, procedures, and finances, information about which is readily available on our website. We have established liaisons with all of the major ophthalmic

subspecialty groups as well as interest groups such as the Young Ophthalmologists. We want to keep our fees as low as possible (and they already are below the median compared with other certifying boards), so we have looked for ways to cut costs, for instance, by transitioning in 2018 from a physical office to a virtual office model. This turned out to serve us well when the COVID-19 pandemic hit last year, as we were able to continue operations seamlessly. But the pandemic forced us to cancel the 2020 oral exam. After we did so, hundreds of dedicated volunteers worked with the ABO staff to administer the exam online. This was new territory for any certifying board.

As regards the future, I am concerned that not enough physicians appreciate that society has given us the extraordinary privilege of professional self-regulation. It would be so easy for that privilege to be subsumed by the government or some other entity, which in my opinion would not be a step forward for the typical overworked practicing physician. So there is plenty of work to do, and we really cannot afford to fail.

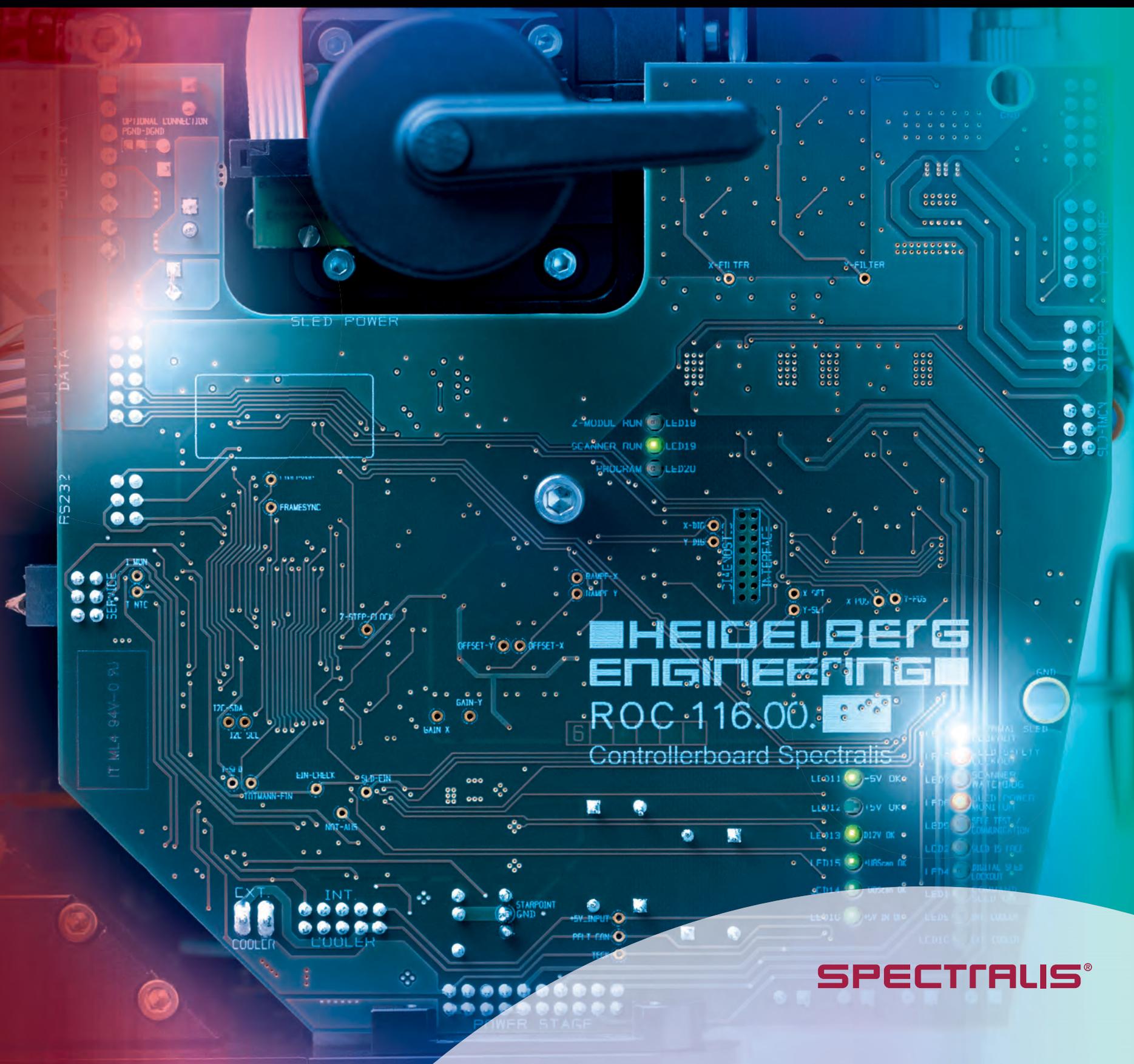
Thoughts for Young Ophthalmologists

Is there any advice you'd like to give to those starting out in their training or career in ophthalmology now?

I would encourage young people to pursue the broadest range of experience possible, outside of medicine, such as working odd jobs. I was a night janitor for a while. Cleaning restrooms at 3 a.m. is an educational experience. I also spent a summer working as a foreman in a General Motors plant. By rule, I couldn't operate any of the machinery, so I learned a lot about the importance of working with the line workers to achieve our daily production quotas. Very helpful training for being a department chair or a CEO or medical school dean.

Once people match into their ophthalmology residency and then fellowship, I encourage them to keep in touch with general medicine, for instance, by at least perusing the *New England Journal of Medicine* and *JAMA* each week. Ophthalmology is ridiculously interesting, but it is easy to get far down a sub-sub-sub-specialty path very quickly.

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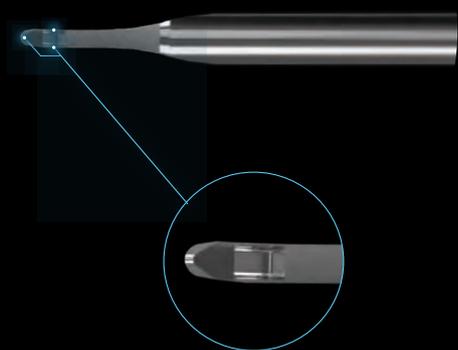
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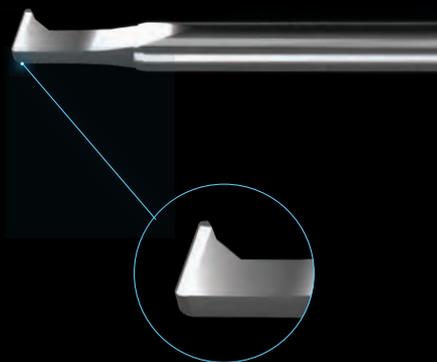


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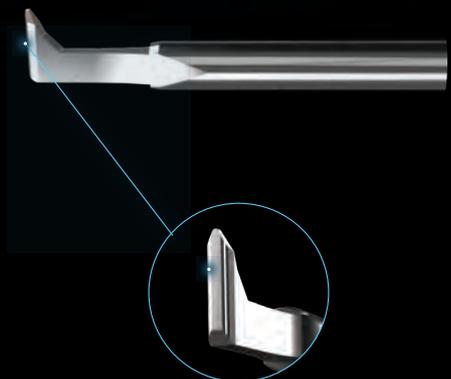
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