AAO 2020 News

THE VIRTUAL MEETING: NOV. 13-15

Don’t Miss the Insiders’ Guide to Subspecialty Day

AAO 2020 VIRTUAL

MIGS SURGEONS GET ONE SHOT
MAKE A WISE DECISION

Progression in glaucoma never stops. Neither does the need for effective IOP management. That’s why your best shot in MIGS with cataract surgery is the Hydrus® Microstent—the one option proven in a pivotal trial to deliver:

- The greatest improvement of medication elimination¹-⁴*
- The largest IOP reduction¹-⁴*
- A statistically significant reduction in risk of invasive secondary glaucoma surgeries’

When it’s time to make a decision about MIGS, give your one shot the best chance to deliver the highest quality patient outcomes.

Experience A New Confidence

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I—and my webcam—will be ready for the virtual lounge. EyePlay Experience. And as for those happenchance hallway encounters, Friday, Nov. 13, through Sunday, Nov. 15. In addition, view all annual meet—

will get access to more than 100 hours of live-streamed sessions from the Academy’s annual meeting. Now, in this pandemic year, the Academy past years, the virtual component has been a small but growing part of (Don’t forget to sign up at aao.org/gala.)

laissez les bon temps rouler—after I take my pick of the live until then to

intraocular pressure reduction in primary open-angle glaucoma and cataract: The HORIZON Study. 1.

Samuelson TW, Chang DF, Marquis R, et al; HORIZON Investigators. A Schlemm canal microstent for

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 the Hydrus Microstent has not been established as an alternative to the primary treatment of glaucoma with medications, in patients of any sex or glaucoma type with significant prior surgical history, when the patient has had or is scheduled to have other glaucoma procedures associated with vascular disorders, eyes with uveitic glaucoma, eyes with pseudophakic or pigmentary glaucoma, eyes with other secondary open angle glaucomas, eyes that have undergone prior incisional glaucoma surgery or cilioselective procedures, eyes that have undergone argon laser trabeculoplasty (ALT), eyes with unmedicated IOP > 22 mm Hg or ≥ 34 mm Hg in the treated eye, eyes with glaucoma 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.

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

INDICATIONS FOR USE: The Hydrus Microstent is indicated for use in conjunction with cataract surgery for the reduction of intraocular pressure (IOP) in patients with open-angle and moderately open-angle glaucoma (POAG). CONTRAINDICATIONS: The Hydrus Microstent is contraindicated in the following circumstances or conditions: (1) in eyes with traumatic, malignant, uveitic, or neovascular glaucoma of disciform congenital anomalies of the anterior chamber (AC) angle. WARNINGS: Clear media for adequate visualization is required. Conditions that may impair clear media visualization include corneal scars, corneal haze, corneal opacity, or other conditions may inhibit gonioscopic view of the intended anterior chamber (AC) angle.

WARNINGS: A Schlemm canal microstent for 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 were partial or complete device obstruction (7.3%); worsening in visual field Mean Deviation (MD) by > 2.5 dB compared to baseline (1.6%); infections (1.6%); choroidal effusions (1.6%); hypotony (1.6%); CME (1.6%); retinal detachment (1.6%); uveitis (1.6%); and endophthalmitis (0.6%). In the non-randomized study, the most common adverse events were partial or complete device obstruction (1.9%); worsening in visual field MD by > 2.5 dB compared to baseline (1.9%); CME (1.9%); retinal detachment (1.9%); endophthalmitis (0.09%) and IOP drop ≤ 5 mm Hg (0.09%). 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 information. 

References:


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Who Is Malcolm Gladwell? Learn More About the Closing Session Speaker

Dr. McLeod, who will be speaking with Mr. Gladwell at the AAO 2020 Virtual Closing Session, holds several positions: He is the editor-in-chief of Ophthalmology, the Theresa M. and Wayne M. Cagayl, MD, Distinguished Professor and Chair of the Department of Ophthalmology at the University of California, San Francisco, and the Chair of the Ophthalmic Devices Panel of the Medical Devices Advisory Committee of the FDA. Dr. McLeod is a noted researcher with many peer-reviewed publications and a highly respected clinician, specializing in refractive surgery, cornea, and external disease.

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After the success of his first book, Mr. Gladwell went on to write five more New York Times bestsellers. In his 2005 book, Blink: The Power of Thinking Without Thinking, Mr. Gladwell argues that humans have adapted to make unconscious decisions rapidly based on how the mind has interpreted past events. In his 2008 book, Outliers: The Story of Success, Mr. Gladwell examines how a combination of personal ambition and external circumstances can affect anyone’s potential for success. In his 2009 book, What the Dog Saw: And Other Adventures, Mr. Gladwell shares some of his favorite articles from The New Yorker since he became a staff writer in 1996. In his 2013 book, David and Goliath: Underdogs, Misfits, and the Art of Battling Giants, Mr. Gladwell studies the struggles of underdogs versus favorites. As a cultural observer, Mr. Gladwell has come to be known as a prominent cultural observer and social commentator. In keeping with that role, he has never been one to shy from conversation surrounding current events including crime, technology, and race. Of the current COVID-19 pandemic, Mr. Gladwell has said: “By the time a vaccine is ready, we will have a much better understanding of who’s most vulnerable. And if we give the vaccine to anyone before those people, I will pray for our mortal souls.”

A podcast host. Mr. Gladwell is also the co-founder of Pushkin Industries, an audio content company that produces podcasts, such as Solvable, Against the Rules, and The Happiness Lab. He also hosts Revisionist History, which “reconsiders things both overlooked and misunderstood,” and cohosts Broken Record, where he interviews musicians.

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A speaker at AAO 2020 Virtual. On Sunday, Nov. 15, Dr. McLeod joins Ophthalmology Editor-in-Chief Dr. McLeod for a live conversation with audience participation at the AAO 2020 Virtual Closing Session.

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The Jackson Memorial Lecture
Improving Amblyopia Outcomes Through Clinical Trials and Practice Measurement

In his distinguished career, Michael X. Repka, MD, MBA, has traveled three distinct but complementary paths: as a clinician, an academic, and an advocate for ophthalmology. Now the David L. Guyton, MD, and Feduniak Family Professor of Ophthalmology as well as professor of pediatrics at Johns Hopkins University School of Medicine in Baltimore, Dr. Repka also serves as the Medical Director for Governmental Affairs of the Academy.

Alongside these professional engagements, Dr. Repka has held leadership roles in several organizations, including the Academy, the American Association for Pediatric Ophthalmology and Strabismus, the International Strabismological Association, and the Association for Research in Vision and Ophthalmology. Among his many awards and honors, Dr. Repka has been chosen to present the 2020 Jackson Memorial Lecture.

Education and Mentorship
While still an undergraduate in college, Dr. Repka said he was first drawn to ophthalmology by “the technology and gadgets.” He set his sights on pediatric ophthalmology during residency at Wills Eye Hospital in Philadelphia—at that time, he knew he wanted to perform surgery but also appreciated the variety offered by pediatrics.

“I liked having office practice as well as some surgical practice,” he said, adding “and I just liked dealing with children and their parents, I suppose, more than dealing with older patients.”

Dr. Repka credits the environment of Wills as being a key element in his training. “Mentorship was freely and generously given by practitioners in all of the disciplines.” In particular, he cited Robert D. Reinecke, MD, and Joseph H. Calhoun, MD, in neuro-ophthalmology as being influential. “In particular, he cited Robert D. Reinecke, MD, and Joseph H. Calhoun, MD, in neuro-ophthalmology as being particularly inspirational. He said, “I could see that they liked what they were doing, and it helped me to envision doing something similar.”

Four Key Influencers
After residency, Dr. Repka completed fellowships in neuro-ophthalmology and pediatric ophthalmology at Wilmer under the guidance of Neil R. Miller, MD, and David L. Guyton, MD.

In addition, Arnall Patz, MD, the pioneer of research in retinopathy of prematurity (ROP), spurred Dr. Repka’s lifelong work on that disease. He stayed on at Wilmer, where “there could have been no better place to launch a career.”

“And outside of Wilmer,” said Dr. Repka, “William E. Scott, MD, at the University of Iowa, is a person who provided incomparable support toward my early career development. Although I had no direct training with him, I worked with him on a clinical trial of treatment for acquired esotropia, with the encouragement of Dave Guyton.”

Dr. Repka likened himself in that setting to “a five-year-old going to meetings with the senior men and one woman in the field at the time. But not only did Dr. Scott allow [his presence], he actually fostered my involvement and was certainly instrumental in my early postfellowship career.”

That study, the Prism Adaptation Trial, “helped me learn the field, learn the people, learn study design issues that I had no previous exposure to,” he said. It initiated an interest in clinical trials research, which became an important component in his career.

Dr. Repka called these four prominent ophthalmologists—Dr. Patz, Guyton, Miller, and Scott—the key change agents in moving me forward in my career.

Most Important Accomplishment
Since completing his fellowships, Dr. Repka has held academic appointments in ophthalmology at Wilmer and pediatric medicine at Johns Hopkins. Throughout that time, he has served on multiple departmental and university committees, including those in residency education, ethics, clinical practice, and electronic medical records.

Following his earliest clinical trial experience with Dr. Scott, Dr. Repka has been a principal investigator or coinvestigator in many studies, particularly in amblyopia, strabismus, and ROP. When asked what he considers his most important accomplishment, he answered, without hesitation, “helping start the Pediatric Eye Disease Investigator Group (PEDIG).” Cofounded in 1997 by Dr. Repka, Roy W. Beck, MD, PhD, and Jonathan M. Holmes, MD, with funding from the National Eye Institute, PEDIG has grown to be a collaborative network of researchers at more than 100 sites that has conducted or initiated more than 20 influential clinical multicenter randomized or observational studies.

Amblyopia Outcomes: Room for Improvement?
Dr. Repka’s Jackson lecture will draw upon PEDIG trial data on amblyopia outcomes going back to 1997 as the “groundwork” and then explore data on 1.7 million amblyopic patients in the IRIS Registry “to ask what amblyopia looks like in the United States in the last half of the second decade of the century,” he said. One striking difference he found was that in the data from the IRIS (Intelligent Research in Sight) Registry, refractive causes alone—as opposed to strabismus alone or in combination with refractive error—were much more common than in the PEDIG data.

“I think that is going to change how we think about the condition when we’re seeing that almost 70% of amblyopia cases are from refractive causes alone.”

With regard to amblyopia outcomes, Dr. Repka said that the IRIS Registry outcome measure showed success in 77% of treated children. “Is that the best we can do?” he asked. “Is there room for improvement? Maybe.” To answer that question, he looked back to data from the first PEDIG trial and found that the success rate was about 83%. Much of that disparity, he said, could be attributed to the differences between a clinical trial setting and real-world clinical practice as reflected in the IRIS Registry.

“In a clinical trial you would have the patients most likely to improve, the parents who were most engaged because they signed up for a clinical trial, study coordinators who help the parents and patients, and even parking vouchers.” In contrast, the IRIS Registry data “are going to include some patients who weren’t cooperative with treatment and some parents who weren’t as committed; they’re interested enough to get care, but they’re not as involved as a clinical trial’s parent population,” he noted. And while these two outcomes—that is, the clinical trial representing our gold standard and the IRIS measure—are good, “both reveal that there is still room for improvement,” he said.

Closing the Gap
“One of the benefits of these outcome measurements is that they can demonstrate gaps in care,” which can be monitored over time, said Dr. Repka. “The data can also be used to show that amblyopia is a very common problem and that there is a benefit to intervention—and that provides a powerful argument to help us advocate for the right kinds of health care at the right time.”

“For instance, one disconnect is that a child who has medical coverage for his or her office visits for the diagnosis of amblyopia does not necessarily have coverage for the eyeglasses that are the primary component of the treatment.”

And the data can provide additional support for targeted school-based and preschool-based screening programs, Dr. Repka said.

Ultimately, using the evidence to identify needs and develop strategies for solving them, he said, “all ties back to the advocacy part of my professional life.”

Looking Ahead
And with regard to advocacy, Dr. Repka envisions continuing to work on behalf of all of ophthalmology in D.C. “From the very beginning,” he said, “I’ve enjoyed bringing our message to congressional and agency leadership and staff.”
• Fatal events occurred more frequently in patients with DME
• Although there was a low rate of arterial thromboembolic events (ATEs) observed in the LUCENTIS clinical trials, there is a potential risk of ATEs following intravitreal use of VEGF inhibitors. ATEs are defined as nonfatal stroke, nonfatal myocardial infarction, or vascular death (including deaths of unknown cause)
• Fatal events occurred more frequently in patients with DME and DR at baseline treated monthly with LUCENTIS compared with control. Although the rate of fatal events was low and included causes of death typical of patients with advanced diabetic complications, a potential relationship between these events and intravitreal use of VEGF inhibitors cannot be excluded
• In the LUCENTIS Phase III clinical trials, the most common ocular side effects included conjunctival hemorrhage, eye pain, vitreous floaters, and increased intraocular pressure. The most common non-ocular side effects included nasopharyngitis, anemia, nausea, and cough

Please see Brief Summary of LUCENTIS full Prescribing Information on following page.

You may report side effects to the FDA at (800) FDA-1088 or www.fda.gov/medwatch. You may also report side effects to Genentech at (888) 835-2555.

Randomized, double-masked clinical trials conducted for the 5 LUCENTIS indications included the following: wAMD: MARINA, ANCHOR, PIER, HARBOR; DR and DME: RISE, RIDE; mCNV: RADIANCE, RVO; BRAVO, CRUISE.

6.2 Clinical Studies Experience

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

The data below reflect exposure to 0.5 mg LUCENTIS in 440 patients with neovascular AMD in Studies AMD-1, AMD-2, and AMD-3 in 259 patients with macular edema following RVO. The data also reflect exposure to 0.3 mg LUCENTIS in 250 patients in Studies DME and DR at baseline (see Clinical Studies [14] in the full prescribing information).

Safety data were obtained in Study AMD-1, AMD-2, and in 224 patients with mCNV were consistent with these results. On average, the rates and types of adverse reactions in patients were not significantly affected by dosing regimen.

Glucoma-Related 

In the two controlled studies of patients treated with LUCENTIS compared to control, patients treated with 0.5 mg LUCENTIS had 2.6% (19 of 721) incidence of nonfatal stroke, myocardial infarction, or vascular death (including deaths of unknown etiology) following intravitreal use of VEGF inhibitors. ATEs are defined as nonfatal stroke, myocardial infarction, or vascular death. ATE rate was 2.6% (19 of 721) in the combined group of LUCENTIS-treated patients compared to 1.1% (5 of 435) in patients in the control arms (odds ratio 2.2 (95% confidence interval (0.8-7.1))).

In the second year of Studies AMD-1 and AMD-2, the ATE rate at 2 years was 7.2% (18 of 250) with LUCENTIS-treated patients compared to 2.0% (5 of 250) with 0.3 mg LUCENTIS. The rate of endophthalmitis and retinal detachments was 0.2% (14 of 721) in the combined group of patients treated with 0.3 mg or 0.5 mg LUCENTIS, and in 1.2% (3 of 250) of control patients treated with 0.5 mg LUCENTIS in Studies AMD-1, AMD-2, and AMD-3.

In the three controlled neovascular AMD studies (AMD-1, AMD-2, and AMD-3), during the entire period of the trials, there was a potential risk of AEs following intravitreal use of VEGF inhibitors. AEs are defined as nonfatal stroke, myocardial infarction, or vascular death (including deaths of unknown etiology).

The ATE rate in the three controlled neovascular AMD studies (AMD-1, AMD-2, and AMD-3) during the first 6 months was 4.4% (11 of 250) of patients treated with 0.5 mg LUCENTIS, in 2.8% (7 of 250) of patients treated with 0.3 mg LUCENTIS, and in 1.2% (3 of 250) of control patients treated with 0.5 mg LUCENTIS in Studies AMD-1, AMD-2, and AMD-3.

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The 2020 Presidential Guests
Tales of Support, Advice, and Friendship

Each year, the Academy president in office selects three individuals to be guests of honor at the annual meeting. Anne L. Coleman, MD, PhD, 2020 President, chose her guests for the roles each plays in her life as friends and mentors. Here, Dr. Coleman details the specific reasons for each selection. Dr. Coleman will recognize these award recipients at AAO 2020 Virtual.

GUEST OF HONOR
Bradley R. Straatsma, MD, JD
Who is Dr. Straatsma? He was my chairman when I first started as a young faculty member in 1990. We met when I came to the University of California, Los Angeles for a job interview, and he’s been extremely supportive of my career ever since.

How have you worked together? He’s been a great colleague and advocate of mine; he’s nominated me for different positions in the profession, including the American Ophthalmological Society.

What do you admire most about him? I admire his wisdom and broad knowledge, not only about ophthalmology but also other arenas in life.

I’ve always admired that he’s a lifelong learner—always pushing himself to stay engaged and to participate. He even got a learner—always pushing himself to stay engaged.

What is the best advice he’s ever given you? “All power is elusory.”

Fun facts. Dr. Straatsma played a part in establishing the National Eye Institute in 1968. He participated by convincing organizations representing the blind to support the NEI concept. Initially, they were hesitant to be involved. However, with encouragement from Dr. Straatsma, they became strong supporters of the NEI during critical congressional hearings.

GUEST OF HONOR
M. Roy Wilson, MD
Who is Dr. Wilson? I also met Dr. Wilson when I interviewed at UCLA. I met all three of my guests on the same day, how about that?

During the interview, I learned that he had gotten a master’s in epidemiology. That was one of the reasons why I took the job at UCLA. Because he had been able to do it while he was on faculty, I felt it was an environment where I could also pursue further education.

He was very supportive of me getting my master’s and doctorate degrees. He was on my doctorate committee, he was a colleague in the glaucoma division, and he’s been one of my lifelong friends.

He left UCLA back in 1998, and since then he’s held academic positions around the country. His career has just been stellar, as he’s become more and more responsible for other health care providers and education. Now he’s president of Wayne State in Detroit and has turned that university around.

He’s really an amazing person to have had the opportunity to be friends with.

What do you admire most about Dr. Wilson? He’s got drive and he’s brilliant, and I admire that. He’s also one of those wildly successful men who doesn’t forget his friends.

He and I have been friends since 1990. We haven’t even been in the same city for the past 20 years, yet we’ve maintained a friendship. That takes work and energy and effort that a lot of highly driven and ambitious people would never put into a friendship. He’s also very wise and supportive.

How do you keep in touch with one another? When we see each other at meetings, we make a point to get together, not just for fine dining but just to hang out. His wife, Jacqueline, and he usually invite me along to go for walks and just spend time together.

Fun facts. He loves cycling and pelotons. Not Peloton the exercise bike but cycling around in big groups. He’s a great cyclist. He’s also a wine aficionado. One time we went to Sonoma and did this huge wine tasting and five-course meal that was phenomenal. So, he’s a really fun person to do extreme fine dining with!

THE ACADEMY LOOKS FORWARD TO MORE FEMALE LEADERSHIP
Dr. Coleman, who began her term as Academy president in January, is a glaucoma specialist and an educator with a deep commitment to expanding access to quality eye care.

Dr. Coleman is the fourth female president in the Academy’s 124-year history. Susan H. Day, MD, was the first in 2005; Patricia D. Williams, MD, was the second in 2012; and Cynthia A. Bradford, MD, was the third in 2017. The Academy looks forward to more female leadership with the president-elect, Tamara R. Fountain, MD, who will become the Academy’s first Black woman president in 2021.

The president is the chair of the Academy Board of Trustees and presides at all annual and special Academy meetings. She acts as a representative of the Academy to the medical community at large and federal, state, and local governmental and private agencies and organizations. In her year of service, she works with the Academy CEO to ensure that Academy policies and programs are formulated and executed. She may attend meetings of all committees of the Academy and the Council, other than the Academy’s Nominating Committee; and shall have all other duties and responsibilities prescribed by these Bylaws, the Procedural Rules, and the Operational Procedures and that the Board of Trustees may determine.

Passing of the gavel. Attend Sunday’s Opening Session to see Dr. Coleman introduce her successor.
Back to the Future: Responses to Global Pandemics

This year’s museum display compares and contrasts COVID-19 and trachoma. Visit the Truhlsen-Marmor Museum of the Eye booth at the Resource Center and see why COVID-19 may not be so novel after all.

The year 2020 is now indelibly linked to the COVID-19 global pandemic. As the SARS-CoV-2 virus first hit, many news outlets compared it to other pandemics, particularly the influenza outbreaks of 1918 and 2009 (H1N1). Those retrospective articles were instructive to frame the public’s understanding of the seriousness of the pandemic. The news reports also helped convince populations to shelter in place and “flatten the curve.”

Related to AAO 2020 Virtual, the Truhlsen-Marmor Museum of the Eye decided to look at the world’s response to COVID-19 and compare it to an ophthalmic pandemic in hopes that ophthalmologists might discover interesting insights.

COVID-19 Versus Trachoma
The disease chosen for comparison is trachoma. Trachoma can be thought of as a slow pandemic. It has been documented for thousands of years and has been labeled a pandemic at several points in its history. Now it is hyperendemic in 37 countries, and it is responsible for the blindness or visual impairment of 1.9 million people worldwide.

Immediately, it could be argued that COVID-19 and trachoma have very little in common. One is caused by a virus, the other is a bacterial infection. One attacks the lungs, the other primarily eyes. Most notably, one has an alarming mortality rate, while the other has none. These differences are incredibly important to the etiology and treatment of these diseases. Yet, the world’s reaction to trachoma and COVID-19 are strikingly similar given how different they are.

Travel Bans
Patients with trachoma and those with COVID-19 have been subject to travel bans. During the COVID-19 pandemic, governments worldwide closed their borders. One of the earliest travel bans was instituted by the United States, and by March 13, 2020, the United States had barred foreign nationals from China, Iran, and several European nations. Then on March 21, 2020, the borders with Mexico and Canada were closed. There are historical precedents for such measures.

Inception of travel bans. Between 1831 and 1838, a total of 14 international meetings were held to help countries coordinate their protocols on how to handle diseases arriving at a nation’s ports and standardizing methods of quarantine and hygiene. At the time, the focus was primarily on cholera and its effects on people and commerce. In response to the prevalence of global epidemic disease, the United States passed the Immigration Act of 1891, which specifically barred immigration by those “suffering loathsome or contagious diseases.” To safeguard the border, the law also created federal immigration stations, the most famous of which was established in 1892 on Ellis Island.

Trachoma travel ban. In 1897, trachoma was the first disease the U.S. government classified as “loathsome or contagious.” By 1905, all immigrants were to be examined by the new Public Health Service (PHS) for signs of the disease. Medical officers of the PHS used hooks and fingers to look at the underside of the eyelids. Public hospitals set up trachoma wards for those who could pay for medical treatment or appeared to have less severe cases. Immigrants who were too ill to recover and become self-sufficient citizens were barred entry to the United States, causing headaches for their home countries and the steamship companies that brought them. Seeing the success of U.S. immigration policy, other countries soon followed suit, including Canada, England, and Germany.

New infrastructure
As fear of the SARS-CoV-2 virus spread, many countries and local communities worried that hospitals would not have enough beds, ventilators, and personal protective equipment for doctors and nurses. In the United States, the Army Corps of Engineers established more than 30 field hospitals to alleviate the pressure. These were housed in convention centers and temporary structures. The field hospitals had over 10,000 beds. Through May 2020, the stay-at-home orders issued by a majority of U.S. states meant that the virus remained relatively contained and approximately 8,000 of those beds were never used.

Similar infrastructure, but of a more permanent kind, occurred during the 1803 outbreak of trachoma in Europe. At the time, many countries established eye hospitals in part to separate the trachoma patients from others. The London Dispensary for Curing Diseases of the Eye and Ear was opened in 1803 as part of this movement. It ultimately became Moorfields Eye Hospital.

Lessons Learned
As ophthalmologists worldwide reflect on the crisis during 2020, it is worthwhile to remember that the future of a post-COVID-19 world may well mirror our past experiences of pandemics. Comparing two very different diseases like COVID-19 and trachoma has its limits, but it is very likely that the SARS-CoV-2 virus will become hyperendemic in countries with poorer populations and limited access to health care, just like trachoma.

Let us hope that the current focus on COVID-19 helps to bring the world’s attention to all the diseases that could use the same proactive global fight.

BY JENNY E. BENJAMIN, MA, DIRECTOR, TRUHLSN-MARMOR MUSEUM OF THE EYE & THE STANLEY M. TRUHLSN, MD, DIRECTOR OF OPHTHALMIC HERITAGE.
Advancing ophthalmic solutions for the benefit of patients

When a patient’s vision is threatened, they look to their ophthalmologist for a brighter future. Preserving eyesight while enhancing the patient experience is our singular focus. That’s why Santen is dedicated to finding innovative solutions in glaucoma, retinal diseases, dry eye, and corneal disorders so that ophthalmologists can help their patients enjoy eyesight for longer.

See how Santen is innovating across all of ophthalmology at SantenVirtual.com
Out of the 46 scientific videos viewable during AAO 2020 Virtual, these five were selected as Best of Show. They cover cataract; cornea, external disease; glaucoma; oculoplastics, orbit; and refractive surgery.

**CATARACT**

**New Pupil Expander Used for Capsular Bag Support (V04)**

In this video, we evaluated the use of the Xpand (Diamatrix), a nitinol pupil expander with a 6.7-mm internal aperture. Owing to its design and material characteristics, use of this new expander to perform iridocapsular capture is a promising technique in cases with zonular instability. **Senior author:** Alan S. Crandall, MD.

**CORNEA, EXTERNAL DISEASE**

**Bowman Layer Transplantation: Bridging the Gap in the Management of Keratoconus (V06)**

What can be done with keratoconus cases that showed progression on follow-up, were not eligible for corneal cross-linking, and were too early to be candidates for deep anterior lamellar keratoplasty? In our study, three such cases underwent the Bowman layer transplant procedure after informed consent was obtained from patients.

After the donor cornea was mounted on a Barron artificial anterior chamber, first the epithelium was debrided and the stroma was delineated from the Bowman membrane by injecting air. The Bowman layer was then identified by staining with trypan blue. A 360-degree scoring was done with a bent 26-gauge needle to delineate the Bowman membrane. Using a crescent blade and fine-toothed forceps, the Bowman membrane was gently separated from the underlying stroma.

Corneoscleral tunnel incision was done superiorly/temporally, and the same tunnel was extended throughout the cornea from limbus to limbus at the midstromal level with the help of regular crescent blades and lamellar dissectors. The harvested Bowman layer was then inserted into the stromal pocket with the help of a lens glide, and any folds in the layer were ironed out with a spatula. All three cases showed visual improvement and stabilization of astigmatism in the early post-op period. **Senior author:** Madhu Uddaraju, MS.

**GLAUCOMA**

**Procedures Held During My First Year Glaucoma Fellowship (V15)**

The glaucoma subspecialty is increasingly diverse in terms of surgical procedures. In recent years, many minimally invasive glaucoma surgery (MIGS) devices and procedures have been developed, which reduce the rate of complications and require less postoperative care compared to traditional glaucoma surgeries. However, all glaucoma surgery involves a certain learning curve. Hospital Asociación para Evitar la Ceguera en México (APEC) in Mexico City has a two-year glaucoma fellowship. During the first year, different types of low- to medium-risk surgery are performed, so that in the second year more complex surgeries can be undertaken. This video shows the most commonly used techniques, as well as intraoperative complications that may occur. **Senior Author:** Kristell Mariana Hernandez, MD.

**OCULOPLASTICS, ORBIT**

**TONES (V21)**

In this video, we demonstrate the TONES (transorbital neuroendoscopic surgery) approach facilitated with the chopstick technique for a sphenoidal ridge meningioma. A 63-year-old woman presented with right eye prominence and visual loss over three months. On exam she had 20/200 vision, signs of optic neuropathy, a ~2 deficit in extraocular movement in all directions, and a 3-mm protrusion. The traditional approach is through a craniotomy. For this case, a TONES approach with real-time navigation was used to remove the hyperostotic lateral orbital bone and intracranial meningioma. **Senior author:** Stacey L. Lam, MBCHB.

**REFRACTIVE SURGERY**

**OVD-Free Posterior Chamber Phakic ICL Implantation (V25)**

The use of an ophthalmic viscoelastic device (OVD) during implantable collamer lens (ICL) implantation has been essential to maintaining the stability of the anterior chamber. However, there are also some disadvantages of OVD use. An OVD can cause postoperative elevation of intraocular pressure when it is not completely removed, and it can increase overall operation time because extra time is needed to insert and remove the injected OVD. Herein, we introduce ICL implantation without the use of OVD. **Senior author:** Young-Tae Chung, MD.
Explore the Academy’s New Products
Don’t Miss Out on the 10% Discount

During AAO 2020 Virtual, visit the Resource Center to explore scores of products developed by the Academy and its practice management arm, the American Academy of Ophthalmic Executives (AAOE).

Don’t miss out on this year’s discount. Visit the Resource Center during AAO 2020 Virtual to learn what Academy and AAOE services are available and to find out how you can get a 10% discount (see box) on most Academy and AAOE products.

See what’s new, as well as the tried and true. This article focuses on what’s new since AAO 2019, but you shouldn’t overlook the Academy’s and AAOE’s full range of products, which include many niche products.

Where to find the Resource Center. When you sign in to the AAO 2020 Virtual platform, there will be a link that takes you to the Resource Center.

When will staff be on hand? Academy and AAOE staff will be available to answer your questions from Friday, Nov. 13, through Sunday, Nov. 15, 7:00 a.m. to 4:00 p.m. PST.

New in Clinical Education
What’s new in the 2020-2021 Basic and Clinical Science Course (BCSC). Each year, the 13-volume BCSC is reviewed by more than 100 ophthalmologists to ensure that its information is as concise and current as possible. Each volume features videos, tables, self-assessment questions (with answers), photos and illustrations, and opportunities for earning AMA PRA Category 1 Credit.

While all 13 volumes have been updated, three of them have undergone major revisions:

• Section 04: Ophthalmic Pathology and Intracocular Tumors
• Section 10: Glaucoma
• Section 11: Lens and Cataract

While you are visiting the Resource Center. Over the years, the Academy has developed a rich repository of educational resources. In addition to learning about this year’s new products, you can ask Academy staff about the AAO Ophthalmic Education App; the new AAO e-books app, which allows you to search across all the Academy’s clinical education e-book titles; the BCSC Self-Assessment Program, which now features more than 3,000 high-yield questions (see “Self-Assessment Tools,” page 23); Basic Principles of Ophthalmic Surgery and Basic Techniques of Ophthalmic Surgery; the Dictionary of Eye Terminology; Seventh Edition, which uses plain-language definitions and full-color illustrations to make ophthalmic terminology accessible to everybody in your office; and more.

Important Safety Information

Contraindications
None.

Warnings and Precautions
• Pigmentation changes
• Eyelash changes
• Bacterial keratitis
• Contact lens wear
• Macular edema

Adverse Reactions

Rocklatan®: The most common ocular adverse reaction is conjunctival hyperemia (59%). Five percent of patients discontinued therapy due to conjunctival hyperemia. Other common ocular adverse reactions were: instillation site pain (20%), corneal verticillata (15%), and conjunctival hemorrhage (1%). Eye pruritus, visual acuity reduced, increased lacrimation, instillation site discomfort, and blurred vision were reported in 5-8% of patients.

Netarsudil 0.02%: Instillation site erythema, corneal staining, increased lacrimation and erythema of eyelid.

Latanoprost 0.005%: Foreign body sensation, punctate keratitis, burning and stinging, itching, increased pigmentation of the iris, excessive tearing, eyelid discomfort, dry eye, eye pain, eyelid margin crusting, erythema of the eyelid, upper respiratory tract infection/nasopharyngitis/influenza; photophobia, eyelid edema, myalgia/arthralgia/back pain, and rash/allergic reaction.

Please see brief summary on the adjacent page. For full Prescribing Information, please visit Rocklatan.com. You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch or call 1-800-FDA-1088.

Indications and Usage

Rocklatan® (netarsudil and latanoprost ophthalmic solution) 0.02%/0.005% is approved for the reduction of elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension.

Dosage and Administration

The recommended dosage is one drop in the affected eye(s) once daily in the evening. If one dose is missed, treatment should continue with the next dose in the evening. The dosage of Rocklatan® should not exceed once daily. Rocklatan® may be used concomitantly with other topical ophthalmic drug products to lower IOP. If more than one topical ophthalmic drug is being used, the drugs should be administered at least five (5) minutes apart.

References:

New for Patient Education
What’s new in the Print-on-Demand Handout Subscription. This 12-month subscription provides access to the most comprehensive library of patient education handouts in ophthalmology. It features 164 topics in both English and Spanish, including four brand-new handouts:

- Corneal Cross-Linking
- Myopia Control in Children
- Latte Degeneration
- Coronavirus and Your Eyes

These handouts are easy to customize with your practice information. You can then print them in your office as needed in unlimited quantities (color or black and white).

While you are visiting the Resource Center. As well as asking about the new handouts, you can explore the Academy’s other patient education resources, including dozens of English- and Spanish-language brochures and a collection of video animations, for use on your website or patient portal, depicting eye anatomy, common eye conditions, and treatment options.

COVID and your patients: Digital patient education tools, such as the video collections (see page 19), are more valuable than ever. As direct patient interaction is more limited during the pandemic, enhance your reach by showing treatment-specific informed consent videos on your website or patient portal. Use the Academy’s subspecialty-specific video collections to reinforce your diagnosis and treatment messaging when patients are best able to focus— at home, with family, or any time it’s convenient for them. Documenting use of these OMIC-approved videos helps to mitigate malpractice risk.

New in Practice Management
Conquering New E/M Documentation Guidelines for Ophthalmology. Starting Jan. 1, 2021, Medicare is streamlining the requirements for using the office-based Evaluation and Management (E/M) codes. To help you practice understand what needs to be performed and documented under the new policies, the Academy and AAOE experts have developed Conquering New E/M Documentation Guidelines, an online tutorial with accompanying workbook that includes step-by-step instructions, clinical examples, and worksheets. By passing the exam section of the tutorial, you can earn an electronic certificate of completion.

Get your practice ready for 2021. Each year, there are changes to reimbursement codes and regulations, and each year the AAOE updates its arsenal of coding references:

- 2021 Coding Coach: Complete Ophthalmic Coding Reference
- 2021 CPT: Complete Pocket Ophthalmic Reference
- 2021 Retina Coding: Complete Reference Guide
- 2021 ICD-10-CM for Ophthalmology: The Complete Reference
- 2021 fundamentals of Ophthalmic Coding

• 2021 Coding Assistant: Caractar and Anterior Segment
• 2021 Coding Assistant: Cornea
• 2021 Coding Assistant: Glaucoma
• 2021 Coding Assistant: Oculofacial
• 2021 Coding Assistant: Pediatric/Strabismus
• 2021 Coding Assistant for Subspecialties

While you are visiting the Resource Center. In addition to the aforementioned new and revised coding tools, ask AAOE staff about their ophthalmology-specific practice management primers and references. These include The Learn Practice: A Step-by-Step Guide to Running an Efficient and Profitable Ophthalmic Practice; The Profitable Retina Practice series; The Dispensing Ophthalmologist e-book; and much more.
Contact your Alcon representative to schedule a personalized demo of the latest NGENUITY® 3D Visualization System advancements featuring CENTURION® Vision System and ORA SYSTEM® with VerifEye®+ Technology integration.
Confidence in Demonstrated Safety Data Across 4 FDA-Approved Indications

Visit HCP.EYLEA.US to see safety and efficacy results

anti-VEGF = anti–vascular endothelial growth factor; AMD = Age-related Macular Degeneration; DME = Diabetic Macular Edema; DR = Diabetic Retinopathy; MEfRVO = Macular Edema following Retinal Vein Occlusion.

IMPORTANT SAFETY INFORMATION AND INDICATIONS CONTRAINDICATIONS

• EYLEA is contraindicated in patients with ocular or periocular infections, active intraocular inflammation, or known hypersensitivity to aflibercept or to any of the excipients in EYLEA.

WARNINGS AND PRECAUTIONS

• 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.


Please see Brief Summary of Prescribing Information on the following page.
Anti-VEGF Treatment Backed by Extensive Clinical and Real-World Experience

8 YEARS of extensive clinical experience and the integrity of data from large, well-controlled trials

9 An Estimated MILLION DOSES administered to ≥790,000 eyes since launch (and counting)

8 PHASE 3 CLINICAL TRIALS including more than 3000 EYLEA-treated patients across all approved indications

WARNINGS AND PRECAUTIONS (cont’d)

- 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.

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.

INDICATIONS

EYLEA® (afibercept) 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).

EYLEA is a registered trademark of Regeneron Pharmaceuticals, Inc.

REGENERON

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777 Old Saw Mill River Road, Tarrytown, NY 10591
EYLEA® (aflibercept) Injection full Prescribing Information.

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

INDICATIONS AND USAGE
EYLEA® (aflibercept) is a vascular endothelial growth factor (VEGF) inhibitor indicated for the treatment of:

- Neovascular (RVO)-Related Macular Degeneration (AMD); MacularEdema Following Retinal Vein Occlusion (RVO); Diabetic MacularEdema (DME); Diabetic Retinopathy (DR).

4 CONTRAINdications

4.1 Ocular or Pericellular Infections EYLEA® is contraindicated in patients with active intraocular infection.

4.2 Active Intravitreal Injections 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 anaphylaxis/anaphylactic 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 (6.6)]. 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 Intraocular Pressure

Acute increase 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 perforation 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 non-infarct, non-perforating 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 1.4% (12 out of 842) in the combined group of patients treated with EYLEA® compared with 1.5% (9 out of 595) in patients treated with ranibizumab through week 96. The incidence was 3.3% (15 out of 464) in the EYLEA® group compared with 1.2% (19 out of 159) in the ranibizumab group. The incidence of the ATEs 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% (4 out of 137) 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 2.4% (12 out of 513) in the control group. There were no reported thromboembolic events in the patients treated with EYLEA® in the first six months of the RVO study.

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)]
• Intraocular pressure increase [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 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 2040 patients treated with EYLEA® constituted the safety population in eight phase 3 studies. Among those, 275 patients were treated with the recommended dose of 2 mg. Serious adverse reactions, vitreous hemorrhage, cataract, retinal detachment, vitreous floaters, and intraocular pressure increases ≥3 mmHg were reported. The data described below reflect exposure to EYLEA® in 1824 patients (N=1824) in 2 double-masked, controlled clinical studies (VIEW1 and VIEW2) for 24 months (with active control in year 1).

The data described below reflect exposure to EYLEA® in 578 patients (N=578) treated with wet AMD in a 52-week, double-masked, Phase 3 study that were consistent with the results in Table 3.

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

<table>
<thead>
<tr>
<th>Adverse Reactions</th>
<th>Baseline to Week 52</th>
<th>Baseline to Week 96</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EYLEA® (N=287)</td>
<td>Control (N=287)</td>
</tr>
<tr>
<td></td>
<td>Active Control (N=287)</td>
<td>Active Control (N=287)</td>
</tr>
<tr>
<td></td>
<td>Baseline (N=95)</td>
<td>Baseline (N=95)</td>
</tr>
<tr>
<td></td>
<td>Baseline (N=192)</td>
<td>Baseline (N=192)</td>
</tr>
<tr>
<td>Conjunctival hyperemia</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>Iris hyperemia</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>Retinal pigment epithelium tear</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Cataract</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Foreign body invasion in eyes</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Cataract surgery</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Endophthalmitis</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Retinal detachment &lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

Less common serious adverse reactions reported in ≤1% of the patients treated with EYLEA® were hypotension, trichiasis, and endophthalmitis.

MacularEdema Following Retinal Vein Occlusion (RVO). The data described below reflect exposure to EYLEA® in 28 patients following CRVO and 3 patients following BRVO in one clinical study (VIBRANT).

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

<table>
<thead>
<tr>
<th>Adverse Reactions</th>
<th>EYLEA® (N=9)</th>
<th>CRVO (N=14)</th>
<th>BRVO (N=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (N=9)</td>
<td>Baseline (N=14)</td>
<td>Baseline (N=5)</td>
</tr>
<tr>
<td>Conjunctival hyperemia</td>
<td>12%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Iris hyperemia</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Retinal pigment epithelium tear</td>
<td>6%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Cataract</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Foreign body invasion in eyes</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Cataract surgery</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Endophthalmitis</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Retinal detachment &lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Adverse Reactions</th>
<th>Baseline to Week 52</th>
<th>Baseline to Week 100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EYLEA® (N=142)</td>
<td>Control (N=142)</td>
</tr>
<tr>
<td></td>
<td>Active Control (N=142)</td>
<td>Active Control (N=142)</td>
</tr>
<tr>
<td></td>
<td>Baseline (N=42)</td>
<td>Baseline (N=42)</td>
</tr>
<tr>
<td></td>
<td>Baseline (N=100)</td>
<td>Baseline (N=100)</td>
</tr>
<tr>
<td>Conjunctival hyperemia</td>
<td>16%</td>
<td>11%</td>
</tr>
<tr>
<td>Iris hyperemia</td>
<td>11%</td>
<td>6%</td>
</tr>
<tr>
<td>Retinal pigment epithelium tear</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Cataract</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Foreign body invasion in eyes</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Cataract surgery</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Endophthalmitis</td>
<td>6%</td>
<td>0%</td>
</tr>
<tr>
<td>Retinal detachment &lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

Less common adverse reactions reported in ≤1% of the patients treated with EYLEA® in the CRVO studies were corneal edema, retinal detachment, vitreous detachment, conjunctival hemorrhage, and endophthalmitis.

DiabeticMacularEdema (DME) and Diabetic Retinopathy (DR). The data described below reflect exposure to EYLEA® in 558 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 week 100.

Table 4: Most Common Adverse Reactions (≥1%) in DME Studies

<table>
<thead>
<tr>
<th>Adverse Reactions</th>
<th>Baseline to Week 52</th>
<th>Baseline to Week 100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EYLEA® (N=238)</td>
<td>Control (N=238)</td>
</tr>
<tr>
<td></td>
<td>Active Control (N=238)</td>
<td>Active Control (N=238)</td>
</tr>
<tr>
<td></td>
<td>Baseline (N=69)</td>
<td>Baseline (N=69)</td>
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<td></td>
<td>Baseline (N=169)</td>
<td>Baseline (N=169)</td>
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<tr>
<td>Conjunctival hyperemia</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>Iris hyperemia</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>Retinal pigment epithelium tear</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Cataract</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Foreign body invasion in eyes</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Cataract surgery</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Endophthalmitis</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Retinal detachment &lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

Less common adverse reactions reported in ≤1% of the patients treated with EYLEA® in the CRVO studies were corneal edema, retinal detachment, vitreous detachment, conjunctival hemorrhage, and endophthalmitis.

17 CLINICAL PHARMACOLOGY INFORMATION

In the days following EYLEA® administration, patients are at risk of developing endophthalmitis or retinal detachment. If any symptom is noted, patients should be advised to seek immediate treatment by 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)]. Adverse patients not to drive or use machinery until visual function has recovered sufficiently.
Online Patient Portals: 3 Keys to Better Patient Engagement

A patient portal can boost patient engagement while improving practice efficiency and productivity. Here are three key ways to engage patients with your portal.

1. **Make Portal Promotion an Everyday Routine**

Make a concerted effort to help patients become accustomed to the portal. They are more likely to use it when doctors and office staff repeatedly demonstrate how to use it and discuss what it can do for them.

**Motivate staff to promote the portal.** Promoting the portal should be a routine part of staff procedures. Throughout the patient visit, multiple staff can reinforce this effort: the receptionist, medical assistants, nurses, and physicians. To help keep staff members motivated in this endeavor, track increases in portal usage (e.g., the number of patient online messages collected) and the impact on practice productivity (e.g., estimates of time saved during an office visit because patients already entered information via the portal). Set targets for portal use, and when you reach those milestones make sure you share the news (and the credit) with staff.

**Physicians need to promote the portal.** Keep in mind that your personal recommendation as a doctor has a strong impact on portal use. If you tell patients that registering for the portal is important, they are more likely to register.

**Get patients using the portal while still in your office.** To reinforce learning, if feasible, ask patients to do a simple portal task such as updating their insurance information or medication information while at the practice.

**Don’t let patients leave your office without portal instructions.** Include instructions for the portal on the visit summary page you provide the patient.

2. **Instruct Patients When and How Often to Use the Portal**

Be specific in explaining to patients exactly when and why they should use the portal. For example, if you have sent an educational handout or video to the portal, remind your patients as they leave the office, “information about today’s visit is in your portal. Be sure to look at it and share this information with your family, if you like. It will help you understand your condition/treatment.”

Consider using social media to remind them of the portal, and regularly send valuable content to the portal (see below) to keep it fresh and top of mind.

3. **Make Sure the Portal Is Worth Your Patients’ Time**

If you consistently provide your patients with the information they want and need via the portal, they will return to it.

**Beyond the critical health care data, offer educational materials.** In addition to lab results, physician notes, and their health histories, be sure to include appropriate patient education material. This enables patients to learn about specific conditions and treatment options at home, so they are not inundated with information during the office visit, and they can share the information with their families—a vital way to improve patient understanding and compliance.

**Help patients communicate their concerns.** Consider including a feature that allows patients to record questions and concerns, such as symptoms to remember to report, questions to ask the doctor, or other information to share at their next appointment. If they can send a secure email, that creates another reason to use the portal.

**Provide links to online tools and resources.** For the patient with diabetic retinopathy, for instance, include links to online diabetes management information.

**Engage Your Patients Outside the Office for Better Outcomes**

As an extension of the doctor-patient interaction, a portal allows patients to become more actively involved in their health care. With that involvement, evidence shows that patients experience better outcomes.

**Share Short Videos Via Your Portal**

Make face-to-face discussions with your patients more efficient and productive using Academy patient education videos. When offered on your patient portal or practice website, high-quality Academy videos can be viewed by patients outside of the office, saving valuable time and improving clinic flow.

**Five subspecialties, 71 videos.** Choose from five collections:

- Cataract and Refractive Surgery (22 videos)
- Retina (23 videos)
- Oculoplastics (7 videos)
- Pediatric (9 videos)
- Glaucoma (10 videos)

**What you (and your patients) will get.** Each of these subspecialty collections includes:

- Multiple videos (all 5 minutes or shorter),
- Outlines the most common treatments,
- Supports the informed consent process,
- Is advertising-free,
- Can be posted to any platform, and
- Includes English- and Spanish-language versions.

These videos are yours to own (no subscription required).

**See for yourself.** Visit aao.org/patient-videos to view samples from each collection. If you have questions about patient education products, visit the Resource Center (see box) and use the chat feature.

Although EHRs and patient portals are not perfect, making the effort to directly engage patients in using your portal can pay dividends.

Dr. Maturi is a retina specialist at the Midwest Eye Institute, which has clinics in central Indiana. Relevant financial disclosures: None.

**The Resource Center**

**Got questions?** After signing in to AAO Virtual 2020, click the link to the Resource Center. Staff will be available from Friday, Nov. 13, to Sunday, Nov. 15, 7:00 a.m. to 4:00 p.m. PST.

**Don’t miss out on the 10% discount.** While at the Resource Center, you can get discount codes that—for a limited time—will save you 10% on most purchases at aao.org/store.
Ophthalmology + Twitter = A Successful Pair

Only a few years ago, Ophthalmology had a minimal presence on social media. Now it commands attention across the Twitterverse. What happened?

Stephen D. McLeod, MD, editor-in-chief of Ophthalmology, wanted to grow the social media presence of the journal in order to get more young ophthalmologists (YOs) excited about its peer-reviewed studies. So, in 2018, he invited several members of the Academy YO Committee to help. The social media editors represent various subspecialties and were selected for their well-established presence on Twitter and other social media outlets; each has 1,000 to 2,700 followers. Dr. McLeod hoped that these editors would grow the journal’s social media following as well as engage their colleagues in discussion about the articles. So far in 2020, the editors have cumulatively posted an average of 60 tweets each month, resulting in average total monthly impressions exceeding 154,000. This is up dramatically from 2018, when monthly impressions averaged 63,000 for a total of 54 tweets.

How it’s done. Each week, articles in press from Ophthalmology, Ophthalmology Retina, and Ophthalmology Glaucoma are posted to @AAOjournal on Twitter. Each social media editor is assigned journal articles to tweet about in their personal accounts, and these are retweeted on the Ophthalmology Twitter account.

Pictured here are five successful tweets from the last two years. Success can be defined by the number of impressions (i.e., the number of times that it shows up in a user’s timeline or search results, which reflects the popularity of the tweet). In addition, it can be defined by engagement (i.e., how many times the tweet was shared, how many commented on the tweet, and how many times a branded hashtag was tweeted). What makes a tweet successful? Senior social media editor Lorraine M. Provencher, MD explained that a well-crafted tweet should cover the salient points of a study but should also pique curiosity, drawing the social media user back to the original work.

Be sure to follow the Ophthalmology journal year-round at @AAOjournal and by following each of the editors on their personal accounts. And watch for their live tweets during the AAO 2020 Virtual.

The social media editors are:

Lorraine Provencher, MD, is a glaucoma specialist at the Cincinnati Eye Institute. Her Twitter handle is @DrLorraineEyeMD.

Andrew R. Carey, MD, is a neuro-ophthalmologist at the Wilmer Eye Institute in Baltimore, @DrewCareyMD.

Matt Feng, MD, is a cornea, cataract, and anterior segment surgeon in private practice in Indianapolis, @iDrFeng.

Rajesh C. Rao, MD, is a retina specialist at the University of Michigan, Ann Arbor, @SurgeonRetina.

Edmund Tsui, MD, is a uveitis specialist at the Stein Eye Institute in Los Angeles, @EdmundTsuiMD.

During the AAO 2020 virtual meeting, follow the Academy on Twitter at @aao_ophth and use the hashtag #aao2020.
We celebrate New York Eye and Ear Infirmary of Mount Sinai’s 200-year legacy as the birthplace of ophthalmology in America, an agent of change, and the focal point for innovation and clinical adoption of ground breaking approaches and technologies that have transformed the field with new science, leading-edge tools, and exceptional clinical care.

As the institution looks to the future, we are united by our commitment to healing, our world class ophthalmology training, and our focus on making a meaningful impact on the lives of countless patients nationally and internationally.

Visit our AAO 2020 Virtual Booth.
Learn about the history of NYEE and our Bicentennial Anniversary at www.nyee.edu/200years
Physician learning and maintenance of knowledge is critical to expertly managing patients. After all, it doesn’t inspire confidence in your patients if you must consult “Dr. Google” to recall facts you learned in residency. Many self-assessment tools are available to help with professional learning and review. Below Kevin E. Lai, MD, shares principles and tips for using these tools.

1. Don’t Memorize
   One common study strategy I used during my residency was to read and re-read the Basic and Clinical Science Course (BCSC) books. While the BCSC is a fantastic high-yield ophthalmic knowledge reference, memorization of the text can lead to a false sense of knowledge, or “false fluency.” I discovered this firsthand when I encountered multiple questions on the OKAP during my first year of residency that weren’t verbatim from the BCSC. I struggled with those questions because my knowledge was based more on the phrasing of the text rather than truly understanding the underlying concept.

   **Tip #1. Avoid false fluency.** Self-assessment questions and answers can also be easily memorized. Bolstered by false fluency, you may be tempted to skip or gloss over a question that was previously answered correctly. It is important to make the effort to consciously process every question. One way to do this is by covering up the answer choices and forcing yourself to generate the answer without seeing any choices. Other ways to combat a false sense of mastery include quizzing yourself as you read, making a detailed outline, or writing out the key points in your own words.

2. Learning Requires Effort
   Mental shortcuts, mnemonic devices, and “high yield” reviews are intended to shorten the time and mental energy required to recall complex topics. But to initially learn those concepts and to retain full conceptual understanding requires continued work in order to successfully acquire and retain knowledge over the long term. Learning “the hard way” stays with you longer. For example, even years later, it is much easier for me to recall the differences between meibomian glands and Zeis glands because I had to look them up.

   **Tip #2. Reflect when reviewing.** Whether you’re still in training or in clinical practice, take time at close of business to reflect and learn about the patients seen that day. If you’re working on practice questions, read each answer choice and ask yourself: Why are the other choices wrong? What are the reasons why I chose the right answer? Avoid the temptation to move ahead to the next question before understanding your rationale.

3. Space Out Your Review
   Another common study strategy is to review a concept over and over in rapid succession, or “cramming.” In the book, Make It Stick: The Science of Successful Learning, the authors recommend learning by “spaced repetition.” They assert that long-term retention and comprehension suffers with the cramming technique. Instead, returning to the same material after a period of time forces your brain to recall information that may be difficult to retrieve. The effort that comes from retrieving that information helps your brain “load” that concept into your working memory. Multiple repetitions spaced over time helps your brain flag that concept for rapid retrieval.

   **Tip #3. Use flashcards.** Flashcards are one of the prototypical applications of spaced review. Because the information presented on each flashcard is naturally cycled through the deck, it forces your brain to move away from the topic and return to it later for effortful retrieval. This study technique can be augmented by reviewing difficult questions more frequently and reviewing easier topics less frequently: As you flip through a
Stack of flashcards, place the concepts you struggle with toward the front of the stack to review again sooner and the concepts you are most familiar with toward the end of the stack to review again later.

4 Mix It Up
Studying several different subjects helps solidify topics better than focusing solely on one topic at a time. One of the landmark studies in cognitive learning is the California Polytechnic State University research on contextual interference in skilled baseball players. Researchers found that players who practiced batting by hitting a random sequence of pitches improved their skills more than players who focused on mastering one type of pitch before moving onto a new type of pitch.

Tip #4: Randomize study topics.
Based on the results of that study, cognitive scientists propose that studying multiple different topics in one session may be more effective than trying to master one topic at a time. For example, reading about different diseases in a few BCSC volumes during a study session may lead to better long-term retention than trying to read through a single chapter in one BCSC volume. Likewise, practice questions may be more effective if worked in a random fashion, rather than choosing one subject at a time.

5 Get Timely Feedback
Feedback, both positive and negative, is helpful in the learning process (Fig. 1). For example, I had many conversations with attendings as I was learning cataract surgery. After each case, we discussed every step so that I intentionally reflected on what was effortless and what was challenging. That feedback allowed me to refine my techniques so that my skills improved with each case. Feedback focuses attention on key concepts and helps to build frameworks for understanding what we are learning.

Tip #5: Read discussions.
Reading through the explanations provided after self-assessment practice questions helped me learn both what I was "doing right" and where my rationale was lacking (Fig. 2). Make It Stick states that immediate feedback is not always as helpful as mildly delayed feedback, but that any feedback is better than none at all. So, it may be advisable to work through a set of practice questions and then go back to review the correct answers and rationale, rather than taking it question by question. However, the latter is more effective than not reviewing the answers and rationales at all.

Self-Assessment Tools
In addition to the highly detailed BCSC texts, the Academy has multiple resources available on its website (aao.org/education-browse) for self-assessment, such as Diagnose This challenges (available weekly), self-assessment questions, disease reviews, and clinical webinars. BCSC Self-Assessment. You can also purchase a subscription to the BCSC Self-Assessment Program, which contains over 3,000 practice questions and is constantly being edited and expanded by the Academy Resident Self-Assessment Committee. The Self-Assessment Program incorporates the strategies listed above to help you learn more effectively.

- Avoiding false fluency. The "Challenge Mode" allows you to answer questions in a free-form, short answer style (Fig. 3). This mode prevents you from memorizing the question phrasing (tip #1), to reflect on the rationale for your answer (tip #2), and to space out your review (tip #3).

- Facilitating effortful learning. Every question has a detailed explanation for correct and incorrect answers. Page references to the corresponding section in the BCSC are provided, and a short excerpt from the relevant BCSC text is also provided. When using the BCSC Self-Assessment Program for learning, you may find it helpful to intentionally slow the pace of questions, read each explanation carefully, and look up the relevant passages to reinforce knowledge or to correct deficiencies.

- Spacing out your review. When working through practice questions, be sure to return to questions you answer correctly in addition to the questions you answer incorrectly. In the BCSC Self-Assessment Program, there are several options when creating a new practice exam (Fig. 4). It may be beneficial to review only the incorrectly answered and bookmarked questions once a week while reviewing all questions (allowing for correctly answered questions to cycle through again) monthly.

- Randomizing the questions. The BCSC Self-Assessment Program allows you to create quizzes on specific topics (organized by BCSC volumes). In some cases, this approach may be beneficial. However, there is also significant value in quizzing on all topics at random, which forces your brain to retain information from all subjects in working memory.

- Getting timely feedback. The BCSC Self-Assessment Program gives feedback in two ways. It allows you to read the answer choices immediately after answering a question, or you may answer all the questions in a quiz before reviewing the correct answers and explanations. For shorter quizzes (five to 10 questions), having immediate feedback may work well. For longer quizzes (>10 questions), waiting to review answers affords the opportunity to read over each question again, effectively forcing you to avoid memorizing the question phrasing (tip #1), to reflect on the rationale for your answer (tip #2), and to space out your review (tip #3).

Dr. Lai is assistant professor of clinical ophthalmology, Indiana University School of Medicine in Indianapolis, and founder of OphthalmologyReview.org, which is dedicated to self-studying ophthalmology for OKAP, board exams, and maintaining ophthalmic knowledge. Financial disclosures: OphthalmologyReview.org. O = Equity owner.

Coming Soon
To register for upcoming webinars that feature self-assessment CME, visit aao.org/clinical-webinars. These include:
- Core Knowledge in Neuro-Ophthalmology (Jan. 14)
- Diagnose This Live! (Jan. 21)
- Core Knowledge in Pediatric Ophthalmology/Strabismus (Jan. 28)
New MIPS Reporting Dashboard for IRIS Registry Participants

Check out how you can ease the burden of the MIPS program and look for data-driven insights on your practice patterns, see how you’ll be able to use the new MIPS quality measures, and learn about the IRIS Registry’s new MIPS reporting partner during AAO 2020 Virtual.

In April, the Academy announced that it had chosen Verana Health to serve as the end-to-end data and technology partner for the IRIS Registry. The goal is to provide an enhanced physician experience and enable exceptional data quality for Merit-Based Incentive Payment System (MIPS) reporting and for practice insights.

Practices that are participating in the IRIS Registry via an eligible electronic health record (EHR) system will need to integrate with Verana Data Link, Verana’s EHR integration technology (see “Converting to the Verana platform,” next column).

New future MIPS reporting partner. Practices that integrate their EHR system with Verana Data Link will have future access to a new dashboard to oversee their MIPS quality scores. This dashboard was developed in partnership with the Academy.

No near-term changes for MIPS reporting. There will be no impact on practices’ 2020 MIPS reporting. The current service provider, FIGmd, will continue to support practices until the transition to Verana is complete.

Subspecialty-specific MIPS quality measures. Practices that report quality measures via the IRIS Registry will continue to have access to CMS-approved quality measures that were developed by the Academy.

Three examples:
- IRIS41: Improved Visual Acuity After Epiretinal Membrane Treatment Within 120 Days
- IRIS44: Visual Field Progression in Glaucoma
- IRIS59: Regaining Vision After Cataract Surgery

Such measures enable ophthalmologists to focus on quality improvement activities in their own subspecialty.

Reliability. For MIPS quality category scores, Verana has developed scoring algorithms that are maintained by the company’s in-house team of quality reporting experts who have implemented a logic infrastructure in strict accordance with CMS specifications. In addition, clinicians and informatics experts provided guidance to make sure that quality measure scores are consistent with clinical expectations. Indeed, earlier this year, to ensure that the integrated MIPS scores are complete and reflective of providers’ activities and documentation practices, Verana engaged with practices that were already using Verana Data Link to receive feedback on data mappings.

Converting to the Verana platform. If you are already using EHR-IRIS Registry integration to gather data for MIPS quality measures, your 2020 MIPS reporting will continue to be facilitated by the IRIS Registry’s initial vendor, FIGmd.

To prepare for MIPS reporting, Verana Health has already started contacting practices about switching to the IRIS Registry’s new MIPS reporting platform. Important: Make sure your practice’s IRIS Registry point person knows to watch for an email from Verana’s Practice Experience team—they will contact your practice once they start converting practices that are on your EHR system.

When your practice receives its onboarding email from Verana, please respond promptly. For more information, visit www.veranahealth.com/aao-partnership-expansion-faq/.

Learn more about Verana Data Link. By bringing your questions to the Verana Health exhibit and the Academy Resource Center at AAO 2020 Virtual:
At aao.org/2020, you can sign in to the AAO 2020 Virtual platform, where you can click links to the Virtual Expo (where you’ll find the Verana booth) and to the Resource Center (for the IRIS Registry booth).
You also can email queries about the new MIPS quality reporting dashboard and the Verana Data Link to irisdata@veranahealth.com.

Visit aao.org. For more information on the IRIS Registry and MIPS reporting, visit aao.org/iris-registry and aao.org/medicare, respectively.

Note: This PDF differs from the mailed article to reflect potential changes in the dashboard timeline.

IRIS Registry Findings

By integrating your EHR system with the IRIS Registry, your anonymized patient data is helping researchers to advance eye care. Recently published studies include the following:
- Rubino SM et al. Return to the operating room after vitrectomy for vitreous opacities: IRIS Registry analysis. Ophthalmology Retina. Published online July 17, 2020.

To learn more about the use of IRIS Registry data for research, visit aao.org/iris-registry/research.
INDICATIONS AND USAGE
DURYSTA™ (bimatoprost implant) is indicated for the reduction of intraocular pressure (IOP) in patients with open angle glaucoma (OAG) or ocular hypertension (OHT).

IMPORTANT SAFETY INFORMATION
Contraindications
DURYSTA™ is contraindicated in patients with: active or suspected ocular or periocular infections; corneal endothelial cell dystrophy (e.g., Fuchs’ Dystrophy); prior corneal transplantation or endothelial cell transplants (e.g., Descemet’s Stripping Automated Endothelial Keratoplasty [DSAEK]); absent or ruptured posterior lens capsule, due to the risk of implant migration into the posterior segment; hypersensitivity to bimatoprost or to any other components of the product.

Warnings and Precautions
The presence of DURYSTA™ implants has been associated with corneal adverse reactions and increased risk of corneal endothelial cell loss. Administration of DURYSTA™ should be limited to a single implant per eye without retreatment. Caution should be used when prescribing DURYSTA™ in patients with limited corneal endothelial cell reserve. DURYSTA™ should be used with caution in patients with narrow iridocorneal angles (Shaffer grade < 3) or anatomical obstruction (e.g., scarring) that may prohibit settling in the inferior angle.

Macular edema, including cystoid macular edema, has been reported during treatment with ophthalmic bimatoprost, including DURYSTA™ intracameral implant. DURYSTA™ should be used with caution in aphakic patients, in pseudophakic patients with a torn posterior lens capsule, or in patients with known risk factors for macular edema.

Prostaglandin analogs, including DURYSTA™, have been reported to cause intraocular inflammation. DURYSTA™ should be used with caution in patients with active intraocular inflammation (e.g., uveitis) because the inflammation may be exacerbated.

Ophthalmic bimatoprost, including DURYSTA™ intracameral implant, has been reported to cause changes to pigmented tissues, such as increased pigmentation of the iris. Pigmentation of the iris is likely to be permanent. Patients who receive treatment should be informed of the possibility of increased pigmentation. While treatment with DURYSTA™ can be continued in patients who develop noticeably increased iris pigmentation, these patients should be examined regularly.

Intraocular surgical procedures and injections have been associated with endophthalmitis. Proper aseptic technique must always be used with administering DURYSTA™, and patients should be monitored following the administration.

Adverse Reactions
In controlled studies, the most common ocular adverse reaction reported by 27% of patients was conjunctival hyperemia. Other common adverse reactions reported in 5%–10% of patients were foreign body sensation, eye pain, photophobia, conjunctival hemorrhage, dry eye, eye irritation, intraocular pressure increased, corneal endothelial cell loss, vision blurred, iritis, and headache.

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

Program Directors Share Insights on Subspecialty Day From Cornea to Uveitis

Brief Summary—Please see the DURYSTA™ package insert for full prescribing information.

INDICATIONS AND USAGE
DURYSTA™ (bimatoprost implant) 10 mcg is a prostaglandin analog indicated for the reduction of intraocular pressure (IOP) in patients with open angle glaucoma (OAG) or ocular hypertension (OHT).

CONTRAINDICATIONS
DURYSTA™ is contraindicated in patients with active or suspected ocular infection. DURYSTA™ is also contraindicated in patients with narrow corneal endothelial cell dystrophy, prior corneal transplantation, or endothelial cell transplants; absent or ruptured posterior lens capsule; a history of risk of implant migration into the posterior segment; or hypersensitivity to bimatoprost or any other component of the product.

WARNINGS AND PRECAUTIONS
Corneal Reactions: The presence of DURYSTA™ implants has been associated with corneal adverse reactions and increased risk of corneal endothelial cell loss. Administration of DURYSTA™ should be limited to a single implant per eye without retreatment. Caution should be used when prescribing DURYSTA™ in patients with limited corneal endothelial cell reserve.

Iridoconal Angle: Following administration with DURYSTA™, the intracameral implant is intended to settle within the inferior angle. DURYSTA™ should be used with caution in patients with narrow iridocorneal angles (Shaffer grade 3) or anatomical obstruction (e.g., scarring) that may prohibit settling in the inferior angle.

Macular Edema: Macular edema, including cystoid macular edema, has been reported during treatment with ophthalmic bimatoprost, including DURYSTA™. Intraocular implant. DURYSTA™ should be used with caution in aphakic patients, in pseudophakic patients with a torn posterior lens capsule, or in patients with known risk factors for macular edema.

Intraocular Inflammation: Prostaglandin analogs, including DURYSTA™, have been reported to cause intraocular inflammation. DURYSTA™ should be used with caution in patients with active intraocular inflammation, including uveitis, because the inflammation may be exacerbated.

Pigmentation: Ophthalmic bimatoprost, including DURYSTA™, has been reported to cause changes to pigmented tissues, such as increased pigmentation of the iris. Pigmentation of the iris is likely to be permanent. Patients who receive treatment should be informed of the possibility of increased pigmentation. The pigmentation change is due to increased melanin content in the melanocytes rather than to an increase in the number of melanocytes. While treatment with DURYSTA™ can be continued in patients who develop noticeably increased iris pigmentation, these patients should be monitored following treatment with DURYSTA™.

Potential for Pigmentation:
- Potential for Pigmentation: Advise patients about the potential risk for brown pigmentation of the iris. Pigmentation of the iris is likely to be permanent. Patients who receive treatment should be informed of the possibility of increased pigmentation.
- Potential for Pigmentation: Advise patients about the potential risk for brown pigmentation of the iris. Pigmentation of the iris is likely to be permanent. Patients who receive treatment should be informed of the possibility of increased pigmentation.

ADVERSE REACTIONS
Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice. The most common ocular adverse reactions observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice. The most common ocular adverse reactions observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

program directors share insights on subspecialty day from cornea to uveitis
Of Interest Across Subspecialties

CORNEA
How Imaging Helps Me Assess Fuchs Dystrophy in Clinical Practice, presented by Keith H. Baratz, MD

The decision to proceed with cataract surgery alone versus in combination with keratoplasty in the setting of Fuchs endothelial corneal dystrophy (FECD) often poses a challenge for comprehensive ophthalmologists, especially when corneal edema is not detected by slit-lamp examination. Cutoff measurements for corneal thickness have been suggested, but these are unreliable, as are measurements of endothelial cell density.

A more reliable method of predicting the prognosis of FECD is through interpretation of posterior elevation and pachymetry map patterns derived from Scheimpflug tomography. The method is simple, repeatable, easy to implement in clinical practice, and independent of corneal thickness. Keith H. Baratz, MD, will review the rationale and recommendations for using Scheimpflug imaging in the assessment of FECD.

Sanjay V. Patel, MD, FRCOphth
Cornea program director

GLAUCOMA
Papers to Increase the Odds in Your Practice: Journal Club, moderated by Teresa C. Chen, MD, and Annette L. Giangiacomo, MD

What should you know about the ever-expanding options in glaucoma surgery? This has been a banner year for peer-reviewed articles spanning the range of glaucoma surgical procedures and devices. Our glaucoma journal club will give the lowdown on the traditional tube versus trabeculectomy debate, how the Xen gel stent compares to trabeculectomy, and the latest information on the newest filtration stent, the SIBS microshunt. Plus, the latest data on the Hydrus and iStent devices and follow-up on the Cypass shunt will make this a journal club not to be missed!

Eydie Miller-Ellis, MD, and Brian A. Francis, MD
Glaucoma program directors

OCULAR ONCOLOGY/PATHOLOGY
The Diagnosis, Management, and Prognosis of Vitreoretinal Lymphoma, presented by Jose S. Pulido, MD

Jose S. Pulido, MD, will discuss the diagnosis, prognosis, and management of vitreoretinal lymphoma.

This disease presents both diagnostic and management challenges. For example, there is often a significant delay between the onset of a patient’s symptoms and diagnosis of vitreoretinal lymphoma; and in many patients, multiple surgeries and biopsies are performed before a definitive diagnosis is made.

After that, management and treatment can be complex. Managing vitreoretinal lymphoma requires a coordinated, collaborative approach that includes retina specialists, ocular oncologists, ocular pathologists, cytopathologists, hematopathologists, and the medical oncology team. Dr. Pulido will discuss surgical planning, key steps in obtaining and transporting specimens, various types of pathology testing, and treatment.

The session will be relevant to comprehensive ophthalmologists as well as to subspecialists in areas outside of oncology and pathology, as these practitioners are often involved at each of these important steps.

Paul J. Bryant, MD, and Dan S. Gombos, MD
Ocular Oncology and Pathology program directors

OCULOFACIAL PLASTIC SURGERY
A Wrinkle in the Plan: Aesthetics, moderated by Hee J. Kim, MD

Join us for the aesthetic oculofacial session! Experts will offer insights and best practices with neuromodulators and cosmetic eyelid surgery. Talks will offer keys to avoiding complications as well as optimizing cosmetic surgery outcomes.
From forming a solid and symmetric eyelid crease to avoiding lagophthalmos, this session will boost the skills of cosmetic oculofacial surgeons of all levels.

Jeremiah Tao, MD, FACS, and Catherine J. Hwang, MD
Oculofacial Plastic Surgery program directors

PEDIATRIC OPHTHALMOLOGY
Anterior Segment Innovators and Influencers. Find this session in the on-demand program.

Medical and surgical management of corneal disorders has evolved rapidly during recent years, but adoption of these advances in pediatric ophthalmology has been slower. If you see children in your practice, this session will be of interest because it reviews the state of the art in management of anterior segment disease in children.

Pediatric ophthalmologists and cornea specialists with expertise in the management of children will discuss key topics in anterior segment management. The session will include talks on pediatric corneal cross-linking; management of neurotrophic cornea in children; pediatric refractive surgery; aniridia or limbal stem cell deficiency and transplantation; and amniotic membrane grafting for ocular surface disorders in children.

Michael F. Chiang, MD, and Gena Heidary, MD
Pediatric Ophthalmology program directors

RETINA
The 2020 Debates, moderated by Colin A. McCannel, MD, and Tara A. McCannel, MD

This year’s debate session will include five debates. Topics include how best to manage submacular hemorrhage, first-line treatment for disabling vitreous floaters, anti-VEGF for management of retinopathy of prematurity, management of subretinal fluid in neovascular age-related macular degeneration (nAMD), and preferred dosing treatment for nAMD. The debate on the management of floaters would be of interest to broad areas of ophthalmology since it is a common problem in our aging population. In addition, there remains significant controversy as to whether subretinal fluid in nAMD needs to be completely eliminated or not and which is the best dosing interval for treating nAMD. Hearing both sides of these arguments should be highly beneficial to all ophthalmologists. This session will be especially engaging because the audience around the world will be able to vote during the session. We will select the argument that most successfully changed the opinions of the audience.

Judy E. Kim, MD, and Mark W. Johnson, MD
Retina program directors

UVEITIS
Uveitis 101. Find this session in the on-demand program.

The 2020 Uveitis Subspecialty Day takes a combined approach, encompassing both fundamental principles and their application to cases. The initial section on fundamentals, Uveitis 101, is intended to provide the nonuveitis specialist with a structured and logical approach to intraocular inflammatory disease with particular emphasis on the generation of a differential diagnosis, selection of appropriate testing, and formulation of a treatment plan. Highlights of this section will include presentations on epidemiology and diagnostic approaches to uveitis, as well as practical treatment paradigms for both local and systemic therapy.

H. Nida Sen, MD, MHSc, and Nisha Acharya, MD
Uveitis program directors

Clinical Practices to Reconsider

CORNEA
Ectasia: Rounding the Bend, moderated by Vishal Jhanji, MD

The management strategies for keratoconus have undergone a paradigm shift in the last five years. Corneal cross-linking is
now the first-line treatment for progressive keratoconus. Compared to corneal transplantation, cross-linking in combination with highly specialized contact lenses has helped to save both sight and health care costs. New imaging platforms are available for monitoring disease progression, and nontomographic diagnostic modalities aim to detect prestructural changes in the cornea, which might allow timely decision-making. Lamellar corneal transplantation has also increased in popularity compared to penetrating keratoplasty. During this session, experts in the field will discuss the latest insights into the evaluation and management of corneal ectasias.

Sanjay V. Patel, MD, FRCOphth, and Vishaal Jhangi, MD
Cornea program directors

GLAUCOMA

Glucoma and Retina: Making the Most of the Hand You’re Dealt, moderated by Leon W. Herndon Jr, MD, and Christine L. Larsen, MD
A special session this year will address the challenge of managing glaucoma in the retina patient. IOP elevations can result from retinal vascular disease or be related to a retina intervention, for example multiple anti-VEGF injections or vitrectomy. Management may depend on the approach, whether from the perspective of the glaucoma specialist or the retina specialist. An additional consideration: Presence of retinal disease also makes it difficult to assess glaucoma progression. This session presents the unique opportunity to discuss this topic from the point of view of both specialties.
Eydie Miller-Ellis, MD, and Brian A. Francis, MD
Glaucoma program directors

OCULAR ONCOLOGY/PATHOLOGY

There Is No Increased Risk of Systemic Metastasis Associated With the Use of Intra-Arterial Chemotherapy for Retinoblastoma. Pro, presented by Jasmine H. Francis, MD, and Con, presented by Matthew W. Wilson, MD
The Ocular Oncology and Pathology Subspecialty Day will begin with a discussion and pro/con debate about the role of intra-arterial chemotherapy (IAC) in treating patients with retinoblastoma. Jasmine H. Francis, MD, and Matthew W. Wilson, MD, will discuss the clinical role of IAC, including indications, contraindications, efficacy, and adverse effects. The presentation will go into detail on the question of whether IAC is associated with an increased risk of systemic metastasis. This session provides an up-to-date, evidence-based examination of the benefits and pitfalls of this emerging treatment.
Paul J. Bryant, MD, and Dan S. Gombo, MD
edented way. Our practices were tempo-
rationally limited to caring only for urgent
and emergent patients. Unlike most
subspecialties, retina specialists had rela-
tively large numbers of patients requiring
essential treatment, such as intravitreal
injections and urgent retina surgeries,
throughout the pandemic. The practices
then slowly returned to a “new normal,”
but how different practice settings and
regions adapted to this pandemic varied.
John W. Kitchens, MD, who produced
a virtual program series that addressed
many pandemic issues affecting retina
practices, leads an expert panel of private
and academic retina specialists in a ro-
bust discussion of how we can continue
to provide the best care to our patients
now and beyond 2020.

Judy E. Kim, MD, and
Mark W. Johnson, MD
Retina program directors

**UVEITIS**

**Case Presentation: Pediatric Uveitis/
Surgery—A Nod to Tough Uveitis:
Cataract Is in the Cards,** presented by
Anjum F. Koreishi, MD

Building on the fundamental principles
presented in Uveitis 101, the majority of
the program will center on case-based
presentations that illustrate and amplify
those concepts. The cases will be orga-
nized according the anatomic location
of inflammation: anterior, intermediate,
posterior, and panuveitis. This year’s pro-
gram covers pediatric uveitis in both the
fundamentals section and the surgical
section. During the Surgery in Uveitis—
Pearls session, Anjum F. Koreishi, MD, will
present a pediatric uveitis surgery case.

In each category, a progression from
basic to more complex cases will be pre-
sented to provide educational value for
both the comprehensive ophthalmologist
and the uveitis specialist. This case-based
learning system is intended to be engag-
ing and interactive and to simulate real-
life clinical decision-making. The surgical
management of uveitis complications
will be addressed through both instruc-
tional talks and case-based presentations.

H. Nida Sen, MD, MHSc, and
Nisha Acharya, MD
Uveitis program directors

**Honorary Lectures at Subspecialty Day**

This year’s Retina and Pediatric Ophthalmology Subspecialty Days will each feature a live honorary lecture. Below, the speakers provide a sneak peek of their talks. Take a look, and plan to attend! Check the Virtual Meeting Guide (VMG) schedule for presentation times. Find a link to the VMG at aao.org/2020.

**Charles L. Schepens, MD, Lecture: Retina in the Pandemic,** presented by Julia Haller, MD.

“As 2020, The Year of the Eye, morphed under our gaze into the Year of SARS-CoV-2, ophthalmology became the specialty most impacted by the seismic upheavals of the pandemic. All subspecialties, including retina, reeled under the impact. This year’s first-ever virtual Schepens Lecture will delve into COVID-19 and its mark on our specialty—the ways we confronted its assault, some of the outcomes of that confrontation, and its long-term reverberations.”

**The Leonard Apt Lecture: Surgical Management of Infantile Nystagmus,** presented by Sean P. Donahue, MD, PhD.

“The differential diagnosis and management of children (and adults) with infantile nystagmus syndrome (INS) can be perplexing. All patients with infantile nystagmus must have the integrity of their afferent visual system confirmed, either through direct examination, neuroimaging, or genetic testing. INS must be distinguished from fusion maldevelopment syndrome and compressive lesions of the anterior afferent visual pathways (spasmus nutans syndrome). Surgical management seeks to eliminate abnormal head positioning (AHP) to achieve a null position and to reduce any coexisting strabismus by employing techniques of strabismus surgery. Augmenting Kestenbaum’s original 5-6-7-8 formula is effective in reducing AHP for up to 10 years or more. Modifications of these numbers should be used when strabismus coexists. Surgery on the cyclovertical muscles can reduce or eliminate vertical (chin up or chin down) or torsional head positions.”

**WATCH YOUR INBOX.** Read more Sub-
specialty Day previews in the Thursday,
Nov. 12, AAO 2020 Daily e-newsletter.

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Winning Photography Goes Virtual

The photos shown here were selected from among the winners at the 2019 Ophthalmic Photographers’ Society (OPS) Scientific Exhibit during AAO 2019 in San Francisco.

This fall OPS kicked off its virtual program with a “live” Scientific Paper Session, Saturday, Oct. 17. Three weeks later, it concluded when Steve Charles, MD, presented the 15th annual J. Donald M. Gass Memorial Lecture: Full Thickness Macular Patch Graft and Other Applications of Medium Term PFO. Winners of the 2020 OPS photo contest will also be showcased on the website.

View the 2020 winners and learn about OPS at www.opsweb.org.

2019 OPS Exhibit Winners

From top to bottom, and left to right.

Fluorescein Angiography, Second Place. RPE Detachment, Retinal Tear. Antoinette Venckus, CRA. University of Iowa Department of Ophthalmology & Visual Sciences, Iowa City.

Gross Specimen, Third Place. Tunica Vasculosa Lentis-Infant Eye. Ralph Eagle Jr., MD. Wills Eye Hospital, Philadelphia.

Composite Image, Third Place. Severe Tractional Retinal Detachment. Jody Troyer, CRA, OCT-A. University of Iowa, Iowa City.

Ultra-Widefield Imaging, First Place. Retinal Detachment With Giant Tear. Becky Weeks, CRA, COA, OCT-C. John Moran Eye Center, Salt Lake City.
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