



2017
Resident Edition



TABLE OF CONTENTS

How to Successfully Prepare for Cataract Surgery	1
From the Editor's Desk	3
3 Ways to Advocate for Your Patients	3
How to Prepare a Patient for Emergency Surgery	5
Edge of Ophthalmology: 2 Emerging Trends	6
9 Can't-Miss Diagnoses	7
OKAP Resources	8
Indirect Ophthalmoscopy 101	10
Residents' Timeline	12
How to Examine the Orbital Fracture Patient	13
Glaucoma Basics: Beyond the IOP	14
To-Do List for the Young Ophthalmologist	15

YO Info

THE YOUNG OPHTHALMOLOGIST'S NEWSLETTER

Your source for clinical pearls, coding, practice management advice and more

How to Successfully Prepare for Cataract Surgery

Welcome to ophthalmology, class of 2020. As a program director, my goal is to help residents become successful surgeons. Building cataract surgical skills can be challenging and stressful due to a steep learning curve — and high stakes for the patient. Both the local anesthesia and instrumentation for microsurgery can make it challenging for faculty to provide real-time feedback. In addition, most residents have limited exposure to microsurgery in medical school, which can create additional stress. Fortunately, you can take several steps before surgery to prepare for the best possible outcome. Here are a few pearls that can aid in early skill development.

1. Know your instruments

Before you start surgical cases, you should thoroughly familiarize yourself with all indications, steps and complications, as well as the instruments you'll need. The Academy's *Basic and Clinical Science Course*™ (BCSC®) books provide a concise list of instruments for many common surgical procedures. The Coursera platform also offers a useful, multi-week, online cataract surgery course. Each of the four units includes five to seven short video lectures plus a quiz. The course takes approximately two to three hours per week over four weeks to complete. Lecture videos cover both medical knowledge and skills. You can enroll yourself in the course, but many programs also enroll residents and monitor progress through official reports.

2. Get comfortable with the microscope and foot pedals

Practice sitting at the microscope and get comfortable with the positioning for both the microscope and stretcher. Also experiment with the foot pedals of the microscope and phacoemulsification unit until you're familiar with the basic process of operating them. Knowing how to turn the microscope on, focus and adjust magnification with the pedal will certainly reduce anxiety when learning how to perform surgical steps. Having good foot-position control over irrigation, aspiration and phacoemulsification will also give you a smoother transition to surgery.

3. Spend time in the wet lab

The wet lab provides a great opportunity to become familiar with instruments and get a feel for the tissue. Practice making incisions and



From L-R: Michigan Medicine Kellogg Eye Center Class of 2016, Stephen Smith, MD; Michelle Kron-Gray, MD; Grace Wang, MD; Kevin Tozer, MD; David De Mill, MD; Max Stem, MD; Neil Farbman, MD; and Shahzad I. Mian, MD.

suturing several times. Although web labs commonly use human and porcine eyes, you can also choose from a broad array of physical simulators that let you focus on essentially every step of cataract surgery.

- The Phillips eye studio globes provide excellent simulation for capsulorhexis. You can also use them for phacoemulsification.
- The Kitaro lab eye model also has similar benefits for simulation. You can also use it to practice suturing.

4. Practice with virtual simulators

If your training program has access to a virtual simulator (for example, the Eyesi made by VRmagic), be sure to take advantage of the system. You can use the Eyesi to develop basic microsurgical motor skills and hand-eye coordination and practice nearly all steps of cataract and retina surgical procedures. Cataract virtual simulators can also help you both improve performance on surgical steps like the capsulorhexis *and* reduce surgical time and complication rates. In addition, the number of hours spent on the simulator correlates with outcomes.

5. Use your mentors

Surgical training has a strong component of preceptorship, whereby mentors aid in a progressive model of surgical competency. Even the wet laboratory curriculum must include supervised practice with senior residents and faculty mentors. Make sure to have

regular discussions and operating-room exposure with faculty. This will help you develop a meaningful mentoring relationship and learn the most you can from more experienced surgeons.

6. Watch surgical videos

Videos provide another great way to become familiar with surgical cases, whether you're assisting or serving as primary surgeon. You can watch videos on the Academy's Ophthalmic News and Education (ONE®) Network or view previous cases of your surgical faculty.

7. Record and review your own surgeries

Once you begin performing your own procedures, good surgical practice habits include recording all cases and reviewing them with other residents and/or faculty mentors.

You will soon learn that there are unique challenges associated with developing surgical skills in all subspecialties of ophthalmology. I wish the class of 2020 great success.

Shahzad I. Mian, MD, is a professor of ophthalmology and visual sciences at the University of Michigan Kellogg Eye Center and holds the Terry J. Bergstrom Collegiate Professorship for Resident Education. He has been director of the residency training program since 2004 and serves as the associate chair for education. He is also the 2017 president of the Program Director's Council of the Association of University Professors of Ophthalmology.



From the Editor's Desk

Welcome to ophthalmology! We're here to support you in your discovery as you start your training. Through *YO Info* newsletters, the American Academy of Ophthalmology offers trainees and young attendings numerous resources to help you successfully start your career. In addition to the annual resident edition, each month, *YO Info* regularly publishes new clinical pearls and advice for coding and practice management and also highlights international and advocacy opportunities.

We also work hard to spotlight people just like you — accomplished young ophthalmologists who are dedicated and work to further our field. Over 7,000 ophthalmologists receive and enjoy *YO Info* domestically and abroad. It's a privilege for us to add you to the fold.

We hope you find *YO Info Resident Edition* to be a helpful preparatory tool and invite you to collaborate with us on bettering your experience as a new young ophthalmologist, which we call a "YO."

In addition, we offer free, specially designed programming for YOs attending the Academy's annual meeting through our monthly e-newsletter. Previous editions of *YO Info Resident Edition* and other helpful articles are online at aao.org/yo.

We're excited to have you join us!

James G. Chelnis, MD, is assistant professor in oculoplastics at the New York Eye and Ear Infirmary of Mount Sinai. He has been on YO Info's editorial board since 2012 and was appointed chair in 2017.



3 Ways to Advocate for Your Patients

Are you advocating for your patients? I'm guessing you are. If you aren't, you should. In fact, you must. It's what makes you a physician.

Think about the time and effort you have spent getting a patient with giant cell arteritis in to see a rheumatologist urgently or to get an urgent MRI for a third nerve palsy on Friday afternoon. For ophthalmologists, advocating for our patients never stops. We take call, while other eye providers don't. As physicians, we have said to patients, "I am committed to

do all I can to treat or save your vision and eyes."

If you knew that there was impending danger or increasing risk to the eyes and vision of your patients or your community, wouldn't you do something about it? You should. You must. That means being an advocate for the eyes and vision of your patients and community in every way possible.

Keeping our promise to patients takes advocacy on a macro level, too. The critical components include building relationships with legislators and contributing to funds that protect quality patient eye care. These include the Academy's OPHTHPAC® fund and the Surgical Scope Fund.

Here are three ways young ophthalmologists can get involved and advocate on behalf of their patients:

1. Speaking out when laws threaten patient safety

Emory University ophthalmology resident Morgan Micheletti, MD, advocated for the patients of Georgia when legislators tried to pass a dangerous bill. "I made numerous phone calls to both senators and representatives regarding the [optometric] scope-expansion bill," he said.



Emory and Augusta University residents join Georgia Society of Ophthalmology leaders at the Georgia State Capitol meeting with Gov. Nathan Deal (center). Morgan Micheletti, MD, pictured right of Gov. Deal.

Surgical Scope Fund	OPHTHPAC Fund	State Eye PAC
Fights optometric surgical initiatives at the state level that pose a threat to patient safety and quality of surgical care	Supports candidates for U.S. Congress	Supports candidates for state legislature
Lobbyists, media, public education, grassroots efforts	Campaign contributions and political education	Campaign contributions and political education
Contributions: Individual or corporate	Contributions: Individual	Contributions: Individual or corporate — check state PAC laws
Contributions are 100% confidential	Contributions above \$200 are on the public record	Contributions are on the public record — check state PAC laws

“I spent several mornings at the Capitol, discussing the bill with legislators in person. We hosted a working legislative dinner with approximately 15 legislators to discuss this bill and its negative impact on patient safety. Additionally, I reached out to numerous news outlets and helped obtain an interview with NPR. I created a discussion in my local neighborhood and encouraged my community to contact our legislators as well. In Georgia, our efforts have blocked two bills in the house — now we just have to continue the fight against SB221.”

legislators can learn from young physicians in personal encounters.”

3. Educating local and federal legislators

Northwestern University resident Deepak Mangla, MD, advocates for the patients of Illinois in multiple ways. “We must not only be simply physicians; we must be able to wear the many hats of lobbyists, accountants and lawyers,” he said. “As the health care landscape changes, so will our practice patterns.”



Deepak Mangla, MD (far right), joins fellow YO Laura Snyder, MD, and Illinois Society of Eye Physicians and Surgeons leaders Sohail Hasan, MD, PhD (far left), and Chris Albanis, MD (middle right), during his participation as an Advocacy Ambassador at the Academy's Mid-Year Forum 2016.

2. Building relationships with legislators

For Joseph Nezgoda, MD, MBA, who finished his retina fellowship at UCSD in 2015, advocacy outside clinic has become a habit. “Patient care was always my passion,” he said. “I began by going to my state ophthalmology society meetings and attending lobby efforts. It is surprising how much state and national

At the local level, Dr. Mangla has lobbied in Springfield, Ill., and participated in a legislative task force of the Illinois Society of Eye Physicians and Surgeons. He advocated for patients at the federal level as a 2016 Advocacy Ambassador.

“Many [critical health care] decisions are left to individuals that lack the expertise to optimize patient outcomes,” he said. “We must be involved in the process, with all of our hats, to allow our profession to continue to maximize outcomes for our patients.”

If these three young ophthalmologists can advocate for their patients, so can you. Advocacy starts the first day of your residency. It's vitally important to your patients and the very essence of what it means to be a physician.

Peter A. Karth, MD, MBA, is a vitreoretinal surgeon in Eugene, Oreg., and joined the Academy's YO Advocacy Subcommittee in 2017. He completed his vitreoretinal fellowship training at Stanford University and subsequently joined the clinical faculty as an assistant clinical professor.



How to Prepare a Patient for Emergency Surgery

As a first-year ophthalmology resident, you will see your fair share of eye emergencies. Some of these will require urgent surgical intervention. Use this checklist as a guide to give patients the best care in these stressful situations.

Make sure the patient takes nothing by mouth

- Once you have the inkling the patient may need surgery the same day, immediately tell him or her to stop eating and drinking. If it is a true emergency, you will not have the luxury of eight hours on an empty stomach.
- The anesthesiologist can make do with rapid-sequence induction using a fast-acting paralytic such as succinylcholine or rocuronium to prevent aspiration.

Take care of logistics

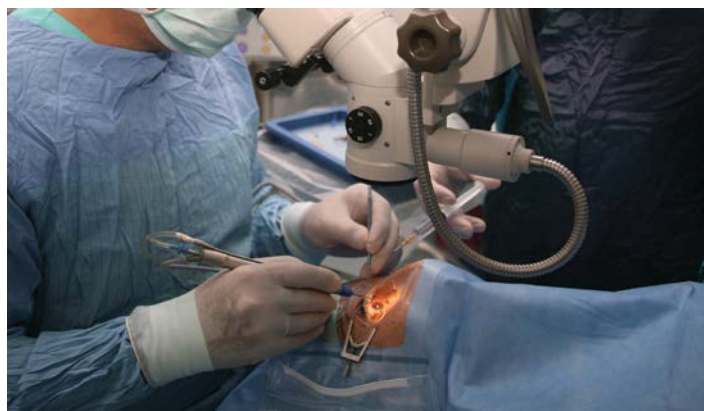
- The specific protocol for adding on an urgent, same-day case in the operating room varies from institution to institution. Each time you start working at a different institution, make sure to learn how things are done.
- Do not delay the necessary procedures: booking an eye OR, calling in the on-call eye team (if there is one) and notifying the anesthesiologist.
- Call the nearest eye bank immediately if you will need donor cornea or sclera for your case.

Assess and protect the open globe

- Gently check the Seidel test using sodium fluorescein. Beware of the possibility of a Seidel-negative wound in a ruptured globe. If the IOP is low enough, you may see no egress of fluid.
- If the globe has ruptured, make sure you start intravenous antibiotics, cover the eye with a fox shield and instruct the patient not to perform the Valsalva maneuver.
- Think about the possibility of a penetrating foreign body. Look for an entry and exit wound.
- Consider a very gentle B scan, especially if you have no view to the posterior segment and you suspect an intraocular foreign body.
- Ask the anesthesiologist not to use succinylcholine during intubation. (This risks expulsion of intraocular contents.)

Consider the possibility of extraocular injury

- In a trauma patient, consider that s/he may have more than eye injuries. For example, if the patient has neu-



rological complications or facial trauma, you will want to consult another service before taking the patient to the OR for dedicated eye surgery.

- Get imaging of the face, orbits and head, if needed.

Obtain informed consent

- In most emergency situations, patients will have a poor, guarded and/or unknown prognosis. Set realistic expectations for the patient and/or guardian.
- If the globe has ruptured, let the patient know that your main goal is to close the eye and decrease the chance of endophthalmitis. The secondary goal is to preserve and improve vision.

Make sure the patient has social support

- Be sensitive that an unexpected need for emergency surgery is stressful and can potentially devastate a patient.
- If family is present, involve them in the discussion of diagnosis and prognosis. The patient will need their moral support and a ride home.

Stay calm

- Expect the unexpected in emergency situations. The better prepared you are, the less flustered you will be in the operating room.

Olivia L. Lee, MD, is a cornea and uveitis specialist at UCLA and has been a member of YO Info's editorial board since 2015. She is also the associate medical director of the Doheny Image Reading Center and the cornea fellowship director at the Doheny Eye Center.



Edge of Ophthalmology: 2 Emerging Trends in Diabetic Retinopathy

Ophthalmology has a long history of performing large-scale clinical trials to guide our management of eye diseases — one of many reasons to take pride in your chosen field. The older landmark trials provide the framework for newer studies. Being familiar with both lets you speak the same language as your attendings and build your patient care around a core of evidence-based medicine.

The Diabetic Retinopathy Clinical Research Network (DRCR.net) is a broad research effort across multiple centers. Funded by the National Eye Institute, the DRCR.net develops a series of clinical trials to answer specific questions about diabetic retinopathy.

Two of these trials have risen to prominence in the last year or so. Familiarizing yourself with them will give you a head start with your patients and attendings.

Injections vs. laser treatment

The DRCR.net Protocol S results published in November 2015 compared intravitreal anti-vascular endothelial growth factor (anti-VEGF) injections to the long-time standard of care, panretinal photocoagulation (PRP) laser. Specifically, the study looked at whether monthly ranibizumab (Lucentis) injections could treat proliferative diabetic retinopathy (PDR) as effectively as PRP.

Laser is generally quite effective at causing neovascularization in PDR to regress, but it damages the peripheral retina and can cause peripheral visual field loss. Anti-VEGF agents have also been observed to regress neovascularization, but we didn't know how long that effect lasted.

The randomized trial compared the eyes of patients who received either PRP at the outset or monthly ranibizumab. Both arms followed a well-defined protocol that allowed for secondary ranibizumab or vitrectomy surgery if needed.

At two years, the ranibizumab group had more visual acuity gain (2.8 vs. 0.2 letters), less visual-field loss, less need for vitrectomy and less diabetic macular edema (DME). The bottom line was that monthly ranibizumab was noninferior to PRP laser for PDR at two years.

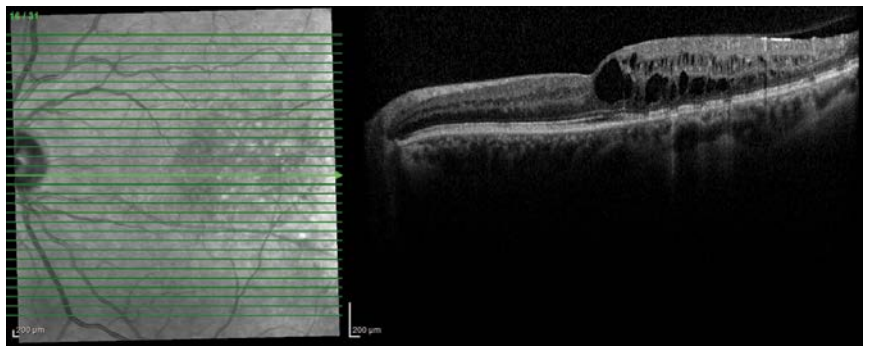


PDR with traction and evidence of prior PRP laser on color photo.

Of course the caveat — and one to keep in mind with the typical resident clinic — is that monthly injections present a treatment burden and require a good deal of patient compliance. Both options — injections and laser — remain important tools in treating PDR.

The best anti-VEGF regimen for DME?

The next study, DRCR.net Protocol T, released one-year results in March 2015 and two-year results in June 2016. This protocol compared three anti-VEGF agents in the treatment of DME: aflibercept (Eylea), ranibizumab and bevacizumab (Avastin). DME is the most common cause of vision loss in diabetic retinopathy. Ophthalmologists already use all three agents to treat DME. This study compared the three medicines when used first monthly and then according to a specific algorithm.



Temporal DME with evidence of prior focal laser on optical coherence tomography.

The year 1 data showed that, across all eyes, there was no statistical difference between the medicines. However, in eyes that were 20/50 or worse, aflibercept was slightly better at improving vision.

The year 2 data, interestingly, detailed that, in worse-seeing eyes, aflibercept remained statistically better than bevacizumab, but no difference emerged when either was compared to ranibizumab. All three drugs improved vision from baseline, and the patients required fewer injections in year 2 than in year 1.

If we're to draw one conclusion from this trial, it would be that all three anti-VEGF agents work well

for DME but should be used consistently and might be needed for more than a year.

These studies have many more facets to them than mentioned here, and aspects of big clinical trials can be quite complex, but it's never too early to start diving into the literature. Start dropping DRCR.net data right away and impress those retina attendings!

D. Wilkin Parke III, MD, is a vitreoretinal specialist with VitreoRetinal Surgery, PA in Minneapolis and has been a member of YO Info's editorial board since 2015.



9 Can't-Miss Diagnoses

You can save eyeballs, vision and lives if you know these diseases.

1. Sebaceous carcinoma

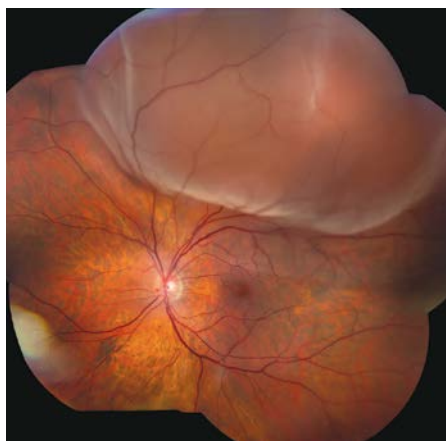


This is not a chalazion, but a potentially lethal cancer. Do not I&D this lesion. Perform a wide excision with sentinel conjunctival biopsies.



arteritis (GCA). If the patient has GCA, s/he needs urgent treatment with steroids. You can start treatment before you take a temporal artery biopsy.

2. Macula-on rhegmatogenous retinal detachment



Complete a careful fundus examination to avoid missing this diagnosis. By definition, it's in the periphery. Once you confirm the diagnosis, get the surgical retina service involved right away!

4. Open globe

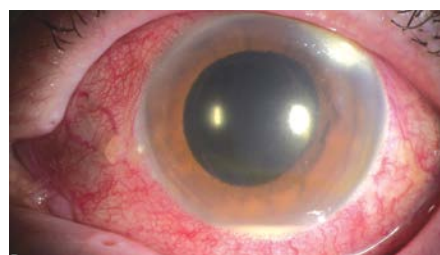


A peaked pupil points toward an open-globe injury. Rule out intraocular foreign body with a CT-orbits. B scan is contraindicated!

3. Giant cell arteritis

With anterior ischemic optic neuropathy in someone older than 50, you should always rule out giant cell

5. Endophthalmitis



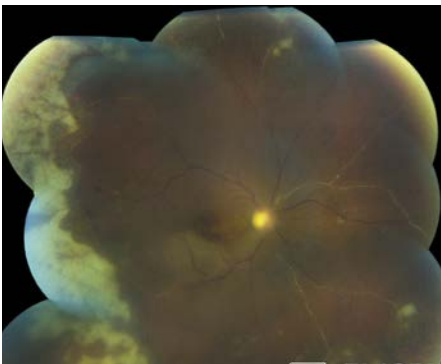
Tap the anterior chamber or vitreous and give empiric intravitreal antibiotics. In severe cases, plan a vitrectomy.

6. Acute third nerve palsy



Signs of palsy include ptosis, dilated pupil and an eye that is down and out. Rule out an intracranial aneurysm at the posterior communicating artery with a CTA or MRA, especially if this involves the pupil.

7. Acute retinal necrosis



This condition presents as retinal whitening in a patient with pain, photophobia, decreased vision and floaters. Urgent treatment with systemic and/or intravitreal antivirals is essential.

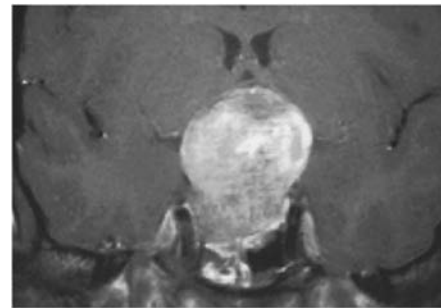
8. Retrobulbar hemorrhage



Patients can have ophthalmoplegia, relative afferent pupillary defect, decreased vision, very high IOP and tight lids. Save vision with an emer-

gent canthotomy and cantholysis.

9. Pituitary apoplexy



Depending on severity, signs/symptoms include multiple cranial nerve (CN) palsies (consider a visual field defect from CN II palsy), severe headache and

altered mental status. Get a brain/pituitary MRI.

Compiled by Purnima S. Patel, MD, and Evan Silverstein, MD.

OKAP Resources

The Ophthalmic Knowledge Assessment Program (OKAP®) is a 260-question, multiple-choice test administered to ophthalmology residents to measure basic science and clinical knowledge. The in-training exam helps you develop good study habits and identify areas of weakness in your knowledge. It also serves as a gauge for the written qualifying exam (boards) that you take once you've graduated. Use these print and online resources to prepare for success on the OKAP.

1. Basic and Clinical Science Course™ (BCSC®)



Published by the Academy, this series serves as the basis of questions that appear on the exam. Set a schedule and stick to it; reading all 13 volumes will take you a full year. Leading up to the exam, it can also be helpful to review the pictures, illustrations and pathology slides. Finally, use the questions at the end of each book to gauge your understanding of the material. The series is available in print or e-book.

2. OphthoQuestions.com

This online question bank offers thousands of quality test questions spanning all subspecialties. Its editors add to the database of questions often and actively manage the site and respond to specific issues raised about questions. You can monitor your performance by subspecialty and compare yourself with your peers. Use the site's tutor mode or sit for a full-length mock exam — or anything in between.

3. The ONE Network

The Academy's Ophthalmic News and Education (ONE®) Network has a vast wealth of information, including videos and cases. Use the self-assessment quizzes to augment your OKAP preparation. The more than 200 "Diagnose This" quizzes also offer

a quick and engaging challenge and provide discussions.

Additional resources from the ONE Network

Preferred Practice Pattern® guidelines: These easy-to-use, evidence-based documents identify the characteristics and components of quality care. Find them at aao.org/ppp.

Strabismus Simulator: This interactive, dynamic simulator helps you to detect and diagnose a variety of eye deviation disorders. Visit aao.org/pediatric-center-detail/strabismus-simulator.



Management of phaco complications lecture: This 17-minute video discusses how to recognize and manage posterior capsule break during phaco-emulsification. Check it out at aao.org/pcbrcak.

Pearls and pitfalls for phaco incisions video: This 10-minute video will help you construct a proper incision — not too tight, not too loose. Watch it at aao.org/annual-meeting-video/bouquet-of-phaco-complications-incision-problems.

Optics course on basic refractive errors: This popular online course will help you understand hyperopia, myopia and accommodations. Take it at aao.org/resident-course/optics-basic-refractive-errors.

4. ProVision, Series 5: Preferred Responses in Ophthalmology

Published by the Academy, this set of 550 multiple-choice questions offers thorough discussions of the preferred responses, plus numerous images and suggested resources for further study. The content has many illustrations and covers all 11 subspecialties, with 50 questions per subspecialty. An e-book version is also available.

5. Review of Ophthalmology

William Trattler, MD; Peter K. Kaiser, MD; and Neil Friedman, MD

This review book uses a bullet-point format that emphasizes the highest-yield information. It is well organized and packed with information, illustrations and review questions.

6. Ophthalmology Review Manual

Kenneth C. Chern, MD, and Michael A. Saidel, MD

The information presented may be slightly less detailed than other resources, but it provides a nice review.

7. Review Questions in Ophthalmology: A Question and Answer Book

Kenneth C. Chern, MD, and Kenneth W. Wright, MD

This question book provides a nice complement to the *Ophthalmology Review Manual*. The questions are less rigorous than those in some other resources, but they still serve as another high-quality resource.

8. The Massachusetts Eye and Ear Infirmary Review Manual for Ophthalmology

Veeral S. Sheth, MD; Marcus M. Marcet, MD; Paulpoj Chiranand, MD; Harit K. Bhatt, MD; Jeffrey C. Lamkin, MD; and Rama D. Jager, MD, MBA

This question book offers a high-yield review section that uses mnemonics to help with retention. It covers all ophthalmic subspecialties and includes many high-quality pictures and photos, plus explanations of answers.

9. Last-Minute Optics: A Concise Review of Optics, Refraction, and Contact Lenses

David G. Hunter, MD, PhD, and Constance E. West, MD

This short book serves as a good resource during the last few weeks before the OKAP — especially if you consider optics a weakness. It covers the gamut of clinical and non-clinical optics. Dr. Hunter also has a four-part lecture series you can view on iTunes.

Jason D. Rupp, MD, PhD, is undergoing a fellowship in glaucoma and complex anterior segment surgery at Washington University, Barnes-Jewish Hospital, in St. Louis. He joined the YO Info editorial board in 2016.



Indirect Ophthalmoscopy 101

Learning indirect ophthalmoscopy may be the most difficult and stress-provoking exam technique a new resident faces. The skill is rightfully challenging — indirect ophthalmoscopy proficiency takes thousands of exams. However, with patience and practice, you too can master it. These basics will get you off to a good start.

1. Dilate properly. To conduct a good peripheral exam, the patient's eyes must be well dilated. Use both 1% tropicamide and 2.5% phenylephrine for the best dilation. Patients with darker-colored irides may need more than one set. A slit-lamp exam with a 90-diopter (D) lens or an improved digital lens can help identify areas of concern, but it does not replace the dynamic interrogation of the retina with indirect ophthalmoscopy and scleral depression.

2. Position the patient for optimal viewing. Successful indirect ophthalmoscopy depends on proper positioning. Ideally, you want the patient to lay flat in a reclining chair with room for you to move freely around the head. A partially upright position will help the shorter resident see the superior retina, but it will also make it nearly impossible to see the inferior retina.

Remember:

- When examining the *superior* retina, “the patient looks up and doctor gets small” (Figure 1).
- When examining the *inferior* retina, “the patient looks down and doctor gets tall.” You will find that subtly tilting the head (usually in the direction of gaze) helps improve the view. (See video at aao.org/yo).

3. Choose the right lens. You have two main options for indirect ophthalmoscopy.



Figure 2. Stabilize the 20-D lens by bracing your fingers on the patient's forehead.

20 D: The most commonly used binocular indirect ophthalmoscopy (BIO) lens, the 20-D double aspheric lens has magnification up to 3.13× and a 60° dynamic field of view. Use the 20-D lens to evaluate macular and peripheral pathology.

28 D: Initially, viewing pathology near the ora serrata is easier with a 28-D lens. The 28-D lens sacrifices some magnification (2.27×) but offers a larger 69° dynamic field of view.

4. Minimize lens distortion. Because of the lenses' aspheric nature, you have to hold the lens right-side up to minimize distortions. Move the lens in and out to focus and refine the view. If your hand is large enough, it helps to stabilize the lens with a finger on the patient's head (Figure 2).

5. Adjust the indirect headset. First, adjust the headband so that the scope is secure on your head.

Then adjust the pupillary distance and height of the beam so you can see a full beam with each eye (Figure 3).

Set the light aperture to the largest spot for a fully dilated patient. Use the smallest aperture for smaller pupils and intraocular gas. The medium light gives an 8-mm-diameter view when in focus with the 20-D lens.

Generally, use the white light filter. A diffuser can improve the field of view and is softer and more comfortable for the patient. Adjust the light intensity to allow yourself a clear view while attempting to make the patient comfortable.



Figure 1. When viewing the superior peripheral retina, the patient looks up and the physician gets low.



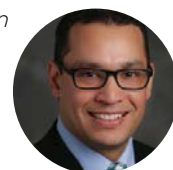
Figure 3. Proper adjustment of the indirect ophthalmoscope should let you center the light beam and obtain a full image with each individual eye.

6. Depress the sclera. This allows for dynamic viewing of the retina. Always perform scleral depression for patients with signs and symptoms concerning for retinal tears or detachments (flashes and floaters). The inward curvature of the anterior retina requires you to depress or deform the globe in order to bring the peripheral retina into your field of view. This is referred to as the “bump.” The dynamic exam allows you to elevate retinal breaks and more easily evaluate them. Topical anesthetic can help make the patient more comfortable. Scleral depressors can vary in size and shape. When in a pinch, a cotton-tip applicator works nicely.

7. Ask for help when you need it. When in doubt, ask an attending or senior resident to confirm your exam findings.

Good luck and remember, practice makes perfect.

Christopher Nathaniel Roybal, MD, PhD, is in his first year of practice at Eye Associates of New Mexico in Albuquerque and joined the YO Info editorial board in 2017. He completed his vitreoretinal fellowship training at the University of Iowa.



AMERICAN ACADEMY™
OF OPHTHALMOLOGY

Join Your Colleagues

AAO 2017 November 11 – 14

Subspecialty Day November 10 – 11

AAOE Program November 11 – 14

AAO 2017—Where all of ophthalmology meets®.

AAO 2017
New Orleans

New inspirations



Registration Opens

June 28 Academy and AAOE Members

July 12 Nonmembers

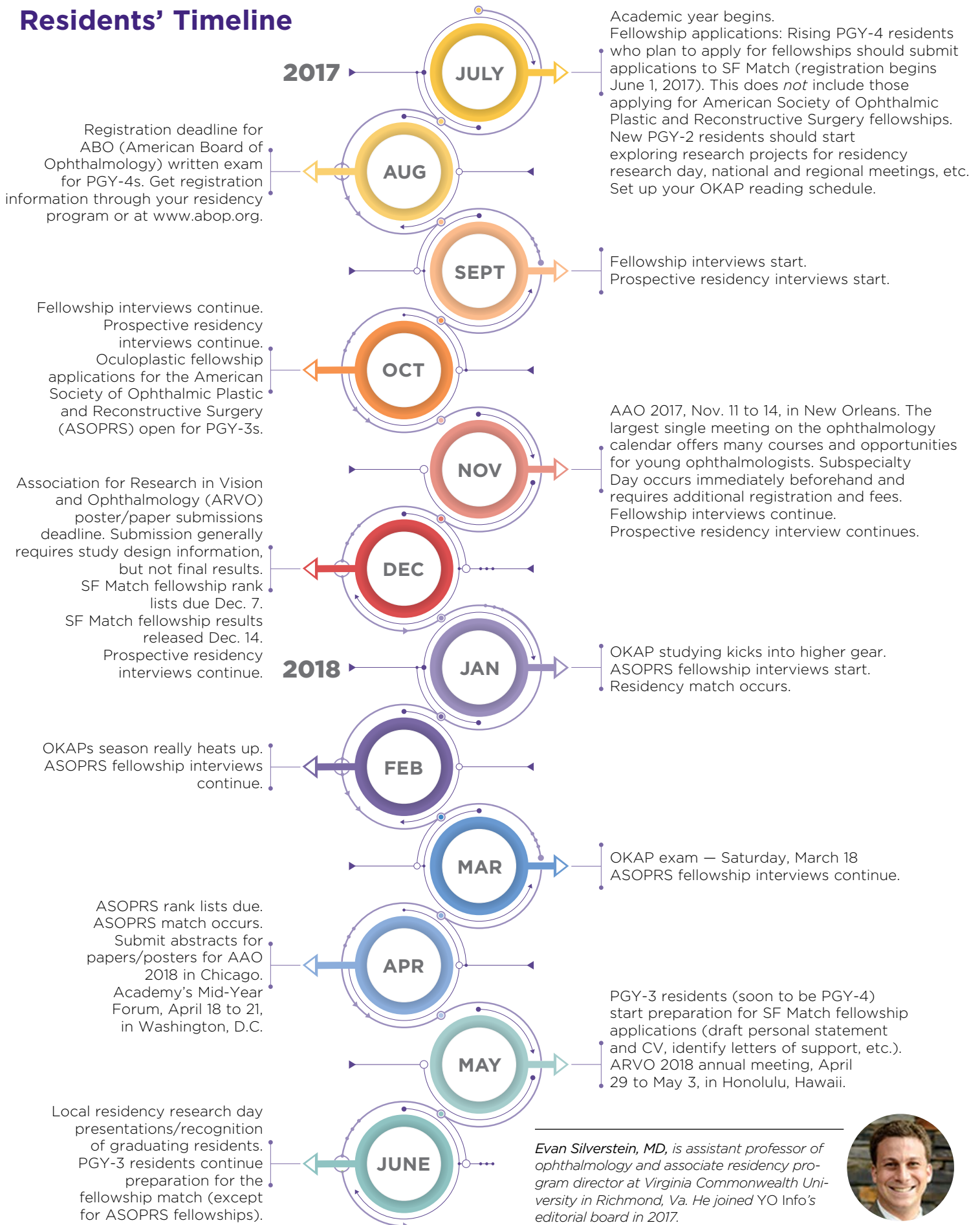
Register by August 9 and save

New solutions

aao.org/2017 #aao2017

Protecting Sight. Empowering Lives.™

Residents' Timeline



Evan Silverstein, MD, is assistant professor of ophthalmology and associate residency program director at Virginia Commonwealth University in Richmond, Va. He joined YO Info's editorial board in 2017.



How to Examine the Orbital Fracture Patient

You've been called in to a facial trauma while on call. Where do you start? What are the important things to examine and note? You can approach such patients in various ways, but here's the approach I've found most helpful for examining a patient with a potential orbital fracture.

1. Clear the globe

Although I often review images and ask history first, the most important step we can take as ophthalmologists is to ensure that the patient has no globe rupture. Scleral lacerations, choroidal ruptures and the like preclude fracture repair. Globe manipulation during repair in such cases can cause further vision loss and eye injury.

2. Take a great history

Before you touch a patient, make sure you hear the story from him/her or someone who was present when the trauma occurred. What is the possibility of foreign bodies being present? Small amounts of organic tissue can introduce virulent gram-negative infections. A good history also empowers you to judge symptoms after injury. Does the patient have a history of amblyopia or other ocular history? Include meds, diagnoses and past surgeries.

3. Review all imaging windows and sequences

Commonly, the emergency provider performs CT scans prior to your arrival.

Make sure the scan is an orbital one (with narrower cuts).

Review the bone window for any fractures and the soft-tissue window for extraocular muscle position, hemorrhages and foreign bodies, among other potential findings.

Remember that entrapment is a clinical diagnosis and that organic foreign bodies may not be obvious on exam.

Mouse over areas that appear to have a density similar to air and check on the Hounsfield units. You can discern organic tissue from air in this manner as most cuts will have sinus air as a comparative baseline.

4. Complete a subjective exam

If the patient is not altered or sedated, gather as much of your subjective exam as possible. With a head trauma patient, you don't know when you will have your next opportunity to gather such information.

For the neuro-orbital exam, remember to test extraocular movement *in each eye separately*, as well as confrontational visual fields.

Include a swinging-flashlight test to rule out afferent pupillary defects, color plates and red desaturation, which allows for comparison of cranial nerve II function between eyes.

5. Touch the patient!

Feel the orbital rim, test retropulsion on both sides and potentially check forced ductions (check with your attending's preferences for cooperative fracture patients with incomplete EOMs).

Put your hands on their temporomandibular joint and have the patient open and close their mouth. Do they have trismus? Crepitus? Always check for asymmetry or loss of sensation in the V1 and V2 distributions, which extend to the teeth.

Don't let the face be your black box. Be confident in examining the globe as well as its surrounding anatomy.

6. Make a decision

Is there an indication for orbitotomy or fracture repair? Some examples could be: 1) if the orbit is tense/under pressure, 2) enophthalmia, 3) muscle entrapment or other restrictive diplopia not likely caused by soft-tissue swelling and 4) large (>50%) floor fractures.

If the answer is yes, discuss the benefits and risks of surgery with patients and family, as appropriate.

If there is no immediate need for repair, you must schedule outpatient follow-up or check on the patient if admitted. Globe dystopia can present once edema has subsided. In rare cases, injury can lead to long-term fat atrophy, creating the need for delayed repair.

You did it! You have carefully approached the orbital trauma patient and discerned their need for care. Trauma patients are under great duress in the emergency care setting. Your preparedness and calm approach will help both you and their recovery.

James G. Chelnis, MD



Glaucoma Basics: Beyond the IOP

Glaucoma is a tip-of-the-iceberg phenomenon. At first glance, it seems simple (just lower the IOP!), but it can abruptly reveal its true nature the deeper you delve. How do you face such an opponent? Be alert, dynamic to change and willing to respond in kind as soon as glaucoma shows you an aggressive side. Follow these tips to handle glaucoma with confidence.

Get gonio comfy

Find the fit

Many of us don't feel completely at ease with gonioscopy. Let's face it: It takes a delicate maneuver just to get a view of the angle. And once you do, what are you supposed to make of what you see? First, figure out what tool feels most comfortable in your hands. You have several body styles of gonioscopy lenses to choose from, and they may not be equally interchangeable for you. Use residency to explore your options and then commit to your own lens. You are much more apt to gonio a patient when you have your favorite lens ready in your pocket.

Learn the angles

Some angles are just tough! One pitfall is to mistake the Sampaulesi line for trabecular meshwork in a narrow angle where something obstructs the true trabecular meshwork. In this case, use the corneal wedge to delineate where Schwalbe's line ought to be, and use dynamic gonioscopy with indentation to assess the extent of the drainage structures you can see.

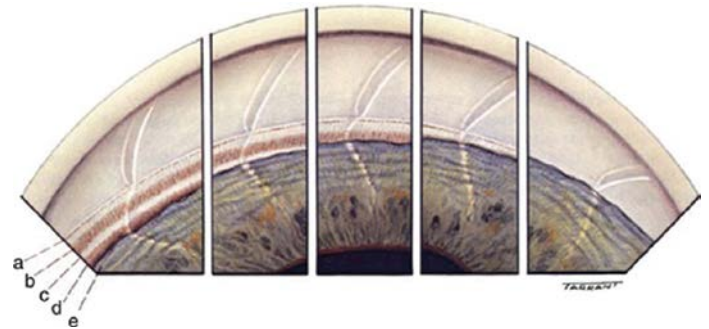
When dealing with an anteriorly bowed iris, you may get a better look "over the hill" by tilting your gonio lens towards the angle being viewed or having the patient look toward your viewing mirror on the lens. All this business of being upside down and backwards with indirect gonioscopy is confusing! Check out Gonioscopy.org for helpful resources on these difficult angle techniques and more.

Practice, practice, practice!

The more angles you look at, the more natural it becomes to get a good view while reinforcing the "normal" angle in your mind. Then, when something different comes along, you're more apt to catch it. All the images and videos in the world can't replace your own experience, so just do it and do it often. One day, you'll realize that it's not so bad and that you're actually pretty good at it!

Keep up with changes in surgery

In recent years, an explosion of newer techniques and devices has supercharged the field of glaucoma surgery, including the Ex-PRESS shunt, the iStent, canaloplasty, the Trabectome, the Kahook Dual Blade, gonioscopy-



The Normal Angle. Various widths of the normal angle seen in consecutive inserts. Note that the corneal optical wedge narrows as it approaches Schwalbe's line and seems to end there in the situation of a narrow angle. (a) Schwalbe's line. (b) Trabecular meshwork. (c) Scleral spur. (d) Ciliary body band. (e) Peripheral iris.

assisted transluminal trabeculotomy, the CyPass Micro-Stent, the InnFocus MicroShunt, the Hydrus Microstent and the Xen gel stent, as well as endoscopic cyclophotocoagulation and micropulse cyclophotocoagulation. Some devices are still pending FDA approval.

Many of the surgeries overlap in concept and territory. You may not need to practice them all, but it behooves you to gain a basic understanding of the available spectrum so you know what options your patients may be referred for.

Don't fret if you are not exposed to any of these innovations during residency; those three years are meant to build your foundation of ophthalmic knowledge. You'll learn most of your career knowledge after graduation.

You can discover more about these hot topics of discussion on Internet and video forums (EyeTube and even YouTube), journal publications and ophthalmology conferences like AAO 2017 in New Orleans, the biggest meeting in the profession. Be sure to also consider conferences with wet-lab workshops that offer hands-on coaching.

If you are really interested in bringing a new item into your practice, a good starting point is the device rep, who will always be happy to visit you. In some instances, you may also need to complete a certification process to use the device.

Jiaxi Ding, MD, is in practice with Carolina Eye Associates in North Carolina, where she specializes in glaucoma. She joined the YO Info editorial board in 2016.



To-Do List for the Young Ophthalmologist

The Academy has developed an extensive range of resources to help the young ophthalmologist embark on a successful career. This to-do list will help you along the way.

Make the most of your membership

Who are the YOs? The young ophthalmologist (YO) designation was established so the Academy could focus resources on members at a formative phase of their career — during residency, fellowship and the first five years of practice.

Benefits for U.S. Academy members include:

- Free registration for AAO 2017
- *Ophthalmology* journal, *EyeNet Magazine* and nine other journals
- Access to the Ophthalmic News & Education (ONE®) Network
- *Focal Points* subscription (members in training only)
- Access to the IRIS® Registry (Intelligent Research in Sight), the nation's first comprehensive eye disease clinical registry
- CME reporting and transcripts at CME Central — aao.org/cme-central
- *Academy Express*, *Washington Report Express* and *YO Info* e-newsletters
- Listing in Find an Ophthalmologist
- Academy MOC Essentials®
- Member discounts on Academy products

If you are also a member of the American Academy of Ophthalmic Executives (AAOE), the Academy's practice management affiliate, additional benefits include:

- Weekly *Practice Management Express* e-newsletters
- Access to E-Talk, E-Retina and E-Code listserv groups
- Customized answers to your questions about coding, Medicare physician payment programs and more
- Access to the Practice Forms Library

For a full list of Academy and AAOE benefits, go to aao.org/member-services/benefits/overview.

Annual Dues*:	Academy	AAOE
In training/fellowship	free	free
1st year in practice	\$425	free
2nd year in practice	\$650	\$285
3rd-5th year in practice	\$975	\$285

* Per calendar year.

Make the most of AAO.org

- Bookmark the YO and Residents landing pages — aao.org/yo and aao.org/residents.
- Create your Find an Ophthalmologist profile on



aao.org (log in and click the green “Find an Ophthalmologist” button).

- Find the forums that are most valuable to you and sign up for their weekly updates — aao.org/forum.
- Stock up on the latest clinical education, patient education and practice management materials at the Academy Store — aao.org/store.

Explore the ONE Network

- Test your clinical knowledge — aao.org/self-assessments.
- View videos and images showing basic skills — aao.org/browse-multimedia.
- Read the Preferred Practice Pattern® guidelines — aao.org/ppp.

Be an advocate

- Advocate for your patients and profession — aao.org/advocacy (click “Get Involved”).
- Learn about the issues — aao.org/advocacy/eye-on-advocacy.
- Advocate locally — aao.org/statesociety.
- Go to Washington, D.C., for next April's Mid-Year Forum and Congressional Advocacy Day — aao.org/myf.
- Contribute to three critical funds — aao.org/advocacy/action/give.

Build a successful practice

- Learn about AAOE resources — aao.org/practice-management.
- Read practice management articles written in *YO Info* — aao.org/yo.
- Find out about the Academy's free EyeSmart® resources — aao.org/eyesmart.
- Read advice about risk management from the Ophthalmic Mutual Insurance Company (OMIC) — omic.com.

Find new inspirations at AAO 2017 — Where All of Ophthalmology Meets

Get ready for AAO 2017 (Nov. 11–14) and Subspecialty Day (Nov. 10–11).

Register on June 28 — aao.org/registration.

After you register, start building your schedule. (Tip: Use the special interest menu to see which events are endorsed by the YO Committee; log in to build your personal calendar.)

Get an Academy Plus course pass — www.aao.org/pass.

Learn about exhibitors and create a MyExpo account to flag those you wish to visit (available mid-August) — aao.org/exhibition.



In October

- Read the YO Guide to AAO 2017 — download it at aao.org/yo.
- Get the Mobile Meeting Guide — download it starting mid-September at aao.org/mobile.

In New Orleans



- Attend Sunday's YO Program, 10 a.m.–2 p.m.
- Visit the YO Lounge to relax and get meeting assistance.
- Network and learn at special YO Lounge events.
- Attend the Global YO Reception on Sunday. (Tip: Tickets are available in the YO Lounge, but they run out quickly.)
- Visit the Academy Resource Center in the exhibit hall.

Engage with the Academy

Go to aao.org/yo, where you can learn how to:

- Submit an article.
- Present at AAO 2018.
- Volunteer for an Academy committee.
- Serve the underserved.



AMERICAN ACADEMY™
OF OPHTHALMOLOGY

YO Info

THE YOUNG OPHTHALMOLOGIST'S NEWSLETTER

Editor-in-Chief
David W. Parke II, MD

Chief Medical Editor
James G. Chelnis, MD

Assistant Editor
Neeshah Azam

2017 YO Info
Editorial Board
James G. Chelnis, MD, Chair
Jiaxi Ding, MD
Olivia L. Lee, MD
D. Wilkin Parke III, MD
Christopher Nathaniel Roybal, MD, PhD
Jason D. Rupp, MD, PhD
Evan Silverstein, MD

YO Committee Chair
Purnima S. Patel, MD

Secretary for Member Services
Brad H. Feldman, MD

Academy Staff
Neeshah Azam
Gail Schmidt

Design
Lourdes Nadon

Website
aao.org/yo

Email
yo@aao.org

Ideas and opinions expressed in YO Info Resident Edition are those of the authors and editors and do not necessarily reflect any position of the American Academy of Ophthalmology.

Supported in part by



Protecting Sight. Empowering Lives.™