

2020
Resident Edition



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YO Info

THE YOUNG OPHTHALMOLOGIST'S NEWSLETTER

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

A Program Director's Thoughts and Advice on Starting Residency

Congratulations on joining the absolute best medical community in the world, the community of ophthalmology.

Your Academy is a member-driven organization that exists to meet the educational needs of all ophthalmologists, from the very newest, like you, to the senior most among our profession.

Please know that as you start this journey, we have all been there. We know that it can be a difficult transition from intern to first-year ophthalmology resident, and we know that more and more of you are in joint or integrated internship programs that are designed to ease this stress and better prepare you to practice ophthalmology. Here are a few tips based on my experience over the past decade working with residents.

Take care of yourself. Burnout and fatigue are very real threats to your well-being and to your ability to take the best care of your patients. Try to get good sleep as much as you can and find fun and inexpensive things to do in your city, like going to a park, taking a walk or visiting a museum. Make wellness an active practice by finding the things that help you reduce stress and making sure you do something each week that you look forward to and enjoy.

Make physical fitness part of your routine, whether it be walking or running, joining a gym or using online fitness classes or apps. Exercise helps memory and reduces stress — plus you need to keep a strong back and core to practice ophthalmology.

Use your time wisely. This is incredibly important because there is so much to learn, and so little time. A growing body of evidence-based practices can help you study better, not harder. Good short primers on these ideas are *Make It Stick*, by Peter C. Brown, Henry L. Roediger III and Mark A. McDaniel, and *Ultralearning*, by Scott H. Young. The most important techniques demonstrated in these books are effortful practice, drilling and varied practice.

When you work harder to recall something, you will form a stronger memory. When you quiz yourself with practice tests before you study something, you prime learning. Mixing it up — not just studying one topic at a time but changing studying methods and topics with varied

practice — helps you remember better. Engage with material rather than just reading and rereading, which really just gives you a false sense of familiarity with the topic.

Engage with Academy resources. Look to the resident section of the Academy's ONE® (Ophthalmic News and Education) Network for all sorts of interactive and engaging ways to learn. In the Pediatric Ophthalmology Center, you can practice refraction, retinoscopy and strabismus measurements and try different lenses and prisms on simulated patients. You can also learn how to interpret optical coherence tomography images through interactive case-based modules.

The Pathology Atlas will help you learn about normal anatomy and disease states through the use of high-resolution slides that you can magnify and study with and without annotations. The ONE Network also has 101 basic courses designed for residents along with a number of flash cards you can download and use to study.

The Academy's Committee for Resident Education wants your input too. If you have suggestions for any additional materials you'd like to see on the ONE Network, contact Sarah Page, the Academy's online education manager, at spage@aao.org.



The residents from the Krieger Eye Institute at Sinai Hospital of Baltimore with the department chair and program director during the 2020 Krieger Symposium. Top row: L-R Drs. Malack Hamade, Alex Willis, Brede Skillings, Jason Alvarez, Maggie Wei Bottom row: Drs. Donald Abrams, Chao Li, Matthew Brink, Krishi Peddada, Brett Campbell, Laura Green

Laura K. Green, MD, is the residency program director for Cornea, Cataract and Refractive Surgery Specialties at the LifeBridge Health Krieger Eye Institute in Baltimore, Md. She is also president of the Association of University Professors of Ophthalmology (AUPO) Program Director's Council and chair of the Academy's Committee for Resident Education.



Don't be afraid to ask questions. Residency is three brief years, and there is so much to learn. Don't just ask questions of your attendings. Ask yourself questions. When you see a patient, think of your differential diagnosis, but then ask yourself a series of questions about the worst-case scenario in order to either rule it in or out: What could kill the patient? What could blind the patient? What doesn't make sense? What either proves or disproves my hypothesis about the diagnosis? What is consistent or inconsistent with this diagnosis?

If you keep these key questions in mind, you will know when you need to ask for help from a more senior colleague, or when you need to order a test in order to rule out a dangerous condition. When you talk with the more senior resident or attending, you will have a better and more specific question to ask — rather than just saying you don't know what's going on.

Lastly, keep in mind why you set out on this journey. Remain grateful for the opportunity you have to touch patients' lives, hear their stories and make a difference at a time when they are vulnerable and scared. Gratitude is an important and grounding act that also helps you to maintain balance through an exciting, but sometimes stressful, time of your life.

From the Editor's Desk

Most new professionals benefit from easing into their new jobs and slowly ramping up their effort and involvement — but not this incoming class of ophthalmologists!

So, what have you taken away and learned from this dramatic global health crisis? Many of us have gravitated toward plainclothes heroes that exude the compassion, resolve and determination we need in order to cobble together a response as COVID-19 spreads across our neighborhoods, our cities and our planet.

I can tell you what ophthalmologists learned — that we are backed by an Academy with seasoned leaders who can rise to tremendous challenges. The year 2020 started as a milestone year for the Academy that quickly demanded a pivot from our leadership. Major events across the country were

“Collecting” Patients: Why Advocacy Should Be on Your Radar From Day 1

In medical school, my favorite attending warned me there are some patients you carry with you forever.

For one reason or another — their story, their pathology, their personality — something resonates with these patients that makes them unforgettable. She called these patients her “collection.” Just as she warned, I am building my own collection of patients who are always with me. Every year, I add one or two new ones to the group; however, there is one in particular — my very first patient — who will forever hold the highest place in my collection.

It was my first night of primary call. She was a 55-year-old African American woman who presented to the ED after noticing vision loss in her left eye. A quick history revealed a strong family history of glaucoma, but she assured me she herself didn't have it.

“I've seen my eye doctor every year for the last 15 years, and he has never mentioned glaucoma,” she said. “I just saw him a few weeks ago, and he said everything looked okay.”

The IOP in her left eye was 49, she had a large relevant afferent pupillary defect and her optic nerve exam revealed near end-stage glaucoma.

canceled — including the Mid-Year Forum 2020 — and the Academy became one of the first medical societies to issue updated practice guidelines to allow ophthalmologists to keep their patients safe and keep themselves protected against unnecessary exposure.

As a community, ophthalmologists rallied to provide care to those who needed it in a critical time. Now, we hope to continue to provide support during a critical time in your own lives. For “Young Ophthalmologists” — or YOs, the annual *YO Info Resident Edition* is meant to be a primer for your career. We're here to help throughout all of this unfamiliarity, so please don't hesitate to lean on us.

James G. Chelnis, MD, is chair of the YO Info editorial board. He is an oculoplastics surgeon in private practice in New York, Ny.



I turned to my senior who was on buddy call with me and asked, “How is this possible? She just saw her eye doctor a few weeks ago?”

Advocate for your patients. As it turns out, she had been regularly seeing an optometrist for glasses, but her exams did not include regular IOP checks, dilated exams or visual field testing. Her vision loss was due to acute recognition of a chronic problem, something we commonly see in patients with undiagnosed advanced glaucoma.

The next day, our chair mentioned in passing that a bill making its way through the state legislature would drastically expand the scope of practice for optometrists in our state. With my patient fresh in mind, I couldn't help but think of her as he talked about this bill. I was drowning in my first week of residency just trying to keep my head above water, avoid blinding anyone and not make a fool of myself in morning report. But somewhere in that craziness I found five minutes to send an email to the members of our state health care committee who were hearing the bill.

Advocate for your career. After that, my experiences with advocacy took off. I was sponsored by the Utah Ophthalmology Society to attend the Academy's Mid-Year Forum 2016 as part of the Advocacy Ambassador Program.

Despite a monstrous case of “imposter syndrome,” I spoke out in my private sessions with senators

Make an Impact through OPHTHPAC® and the Surgical Scope Fund

Stay engaged in state and federal advocacy with these quick tips:

1. Engage with your state ophthalmological society. Your state society fights for laws that protect surgery by surgeons, ensures patient safety and empowers lives. aao.org/aao/Rosters/State-societies

2. Become a Congressional Advocate. Develop a personal relationship with your representative in Congress. Text CONGA to 51555.

3. Follow efforts in your state at www.safesurgerycoalition.org and on social media.

4. Text EYEYO to 51555 to receive federal advocacy updates in the palm of your hand.

5. Learn more about OPHTHPAC® and the Surgical Scope Fund by visiting www.aao.org/advocacy.

and representatives and was amazed that they actually listened to what I was saying. I also met Academy leaders who encouraged me to get more involved, and through those connections, I was asked to speak at the Academy's annual meeting's Young Ophthalmologist Program about my advocacy experience.

Upon graduation, I then joined my state ophthalmology society. And when our legislative chair stepped down a few months ago, I wanted to know how to help and they ended up promoting me to the open position. Ultimately, with the connections I forged during these experiences, I joined the Academy's YO Info editorial board this year.

Build your own collection. The *YO Info* newsletter does have an astonishingly high open rate among our target audience; however, the advocacy articles consistently garner the fewest number of reads. And I get it. In your first year of residency, you are worried about surviving without blinding anyone. In your second year, you are worried about your OKAP score. And in your third year, you are securing a fellowship or finding a job.

Afterwards, you are building a practice, paying off loans and catching up on the life you put off living during a decade of training. At this stage in our life, our resources are limited and our time even more so.

That is exactly why advocacy is so important. The years we spend in residency — the blood, sweat and tears we expend during training — are what separates us from our optometry counterparts. Allowing optometrists to gain legislative privileges devalues everything we worked so hard for during residency and fellowship.

In so many ways, my very first patient changed the course of my career, and for that I am forever grateful. She allowed me to think beyond my residency bubble at the very beginning of my training, and to realize that my responsibility to patients doesn't end with their clinic visit. I encourage you to open up to all the places your patients may take you. Build your collection. And hopefully that process will bring you inevitably to advocacy.



Dr. Simpson pictured right during her visit to the Capitol as an Advocacy Ambassador Program participant, Mid-Year Forum 2016.

Rachel Simpson, MD, is a glaucoma specialist in Salt Lake City, Ut., and joined the YO Info editorial board in 2020.



3 Standout Resident Resources on the ONE Network

The Academy's ONE® (Ophthalmic News and Education) Network is the world's leading online platform for ophthalmic education.

Over 320,000 visitors from around the globe visit every month to access the latest information on patient care — from a wide range of surgical videos and interviews to a number of licensed ophthalmic journals. It's a particularly incredible resource for residents in training as well as young ophthalmologists new to practice. Here are three ONE Network standouts you don't want to miss — all free with your membership.



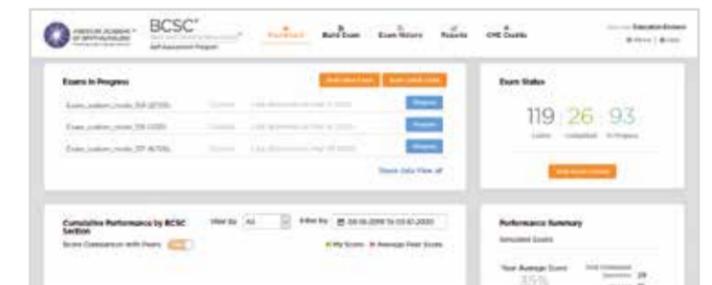
1. Interactive simulators. After learning from your textbooks and lectures, it's wonderful to apply this knowledge in various simulators to test your abilities before actually seeing patients. People learn information in various ways, and these simulators use a variety of multimedia and assessment techniques to teach clinical information.

On the ONE Network, you will find simulators for cataract surgery decision-making, the evaluation of retinopathy of prematurity (ROP) and strabismus, proper techniques for retinoscopy and more. For example, with the Cataract Master, residents can respond to real-world situations during cataract surgery by choosing the steps to perform and deciding how to manage complications. And with



the ROP simulator, residents can evaluate and manage 20 virtual patients through a case-based ROP training program.

2. Over 4,000 (and growing) questions. Self-assessment questions and programs are also available from the Academy. The ONE Network offers more than 1,000 self-assessment questions by subspecialty and more than 500 "Diagnose This" case-based questions — with a new question published weekly.



In addition, the BCSC Self-Assessment Program (subscription required) offers more than 2,800 high-yield questions for OKAP preparation — an exciting opportunity to test your knowledge and remediate on the spot. With this resource, residents can take a simulated timed exam, or go at their own pace, receiving immediate feedback and detailed performance reports to identify exactly which chapters to review. You can also compare your performance with peers, track changes over time and take notes as well.

3. The AAO Ophthalmic Education App. We are excited about the release of the AAO Ophthalmic Education App, which brings together many of the benefits of the ONE Network delivered directly to your smartphone. The app offers personalized notifications based on subspecialty and content preferences as well as 1-Minute Videos, "Diagnose This" questions, access to

EyeWiki and, coming soon, a mobile version of the *Wills Eye Manual*.

With over 19,000 pages of clinical content, the ONE Network is the source for ophthalmic knowledge and learning — during residency and throughout your entire ophthalmic career. Keep your skills sharp and bookmark aao.org/residents.

Rahul Khurana, MD, is a retina specialist in Mountain View, Calif., and is also the editor in chief of the ONE® Network.



Cataract Surgery 101: 4 Pearls for the Beginning Surgeon

When it is time to take the reins as the primary surgeon for your first cataract surgery, you must be prepared with a strong foundation of knowledge. Here we outline four basic yet important pearls that will prepare you and help you excel — all while reducing your stress level.

1. Know your microscope. Understanding the settings of your operating microscope is one of the most fundamental steps of cataract surgery. Take a day out of your busy schedule to learn the basics of your microscope with a senior resident, fellow or attending. Know how to turn on the microscope. Determine if you will be operating from a temporal or superior approach and ensure that you orient the oculars in the right position for yourself and your assistant.

Identify the center focus/XY button and remember to press it at the beginning of a new case so that your microscope is reset before surgery begins. Check your interpupillary distance and then zero both objectives such that you are not seeing double images or overaccommodating through an incorrect refractive error. Practice being able to move the microscope manually using the microscope handles. All of these skills, although seemingly simple, are critical in keeping a smooth case flow. The last thing you want to do is fumble with the microscope before your first case and feel embarrassed!

2. Know your foot pedals. During cataract surgery, all four of your extremities will be constantly active. Not only will you be focused on the fine and precise movements of both your hands throughout the case, but you will also need to use both of your feet simultaneously to control the pedals of your microscope and phacoemulsification machine.

Let's first focus on the microscope foot pedal. Most cataract surgeons will use their nondominant foot for the microscope foot pedal and their dominant foot for the phaco pedal; however, this may vary based upon your training institution and personal preferences. Many ophthalmologists prefer to remove their shoes so that they can better feel the foot pedals. I actually operate with thin soled shoes which help me feel the pedals and preclude the need to remove my shoes..

What are the main functions to know? There is an on/off button on the lower aspect of the pedal. The

joystick on the upper aspect allows you to control the XY position of the scope. There is a lower switch (which is controlled by the heel of your foot) to modulate the zoom and magnification of the microscope, and there is an upper switch (which is controlled with the ball of your foot) that will raise and lower the microscope and make small focus changes.



Operating microscope foot pedal. Functionalities can differ slightly based upon type of microscope used.

You should manually move the microscope with the handles to center the surgical eye and achieve gross focus prior to starting surgery so that you can ensure maximal excursion of the XY joystick as well as the zoom, magnification and focus functions. There are also switches above the joystick that you can use to increase and decrease illumination. Throughout the procedure, you need to dynamically change the lighting, magnification and focus in order to improve your visualization and surgical precision.

The phaco pedal has its own unique features, and there are three main positions: position 1 is irrigation, position 2 is both irrigation and aspiration and position 3 is irrigation, aspiration and ultrasound power. Rapid and accurate foot movements are

necessary to adjust fluidics and power throughout the procedure, and this takes practice to master. Aspiration in position 2 is controlled in a linear fashion: as you depress the foot pedal further, more aspiration is achieved.

Ultrasound power is similarly controlled in position 3. In addition, you can activate different ultrasound modes, such as pulse and burst modes, in this position to help emulsify the lens nucleus. Depending on the surgical step you are performing, you can also use the switches on the foot pedal to move between modes on the phaco machine (including sculpt, chop, quadrant, epinucleus, irrigation and aspiration, polish and anterior vitrectomy). I would learn to independently move through these modes with your foot pedal so that you do not have to depend on your scrub nurse to change settings for you in the midst of a critical step of the surgery.

3. Know your phacoemulsification machine and phacodynamics. There are four main phacodynamic factors that all beginning surgeons need to know.

- **Power** is the ultrasound energy used to break up the cataract.
- The **aspiration rate** is the rate at which fluid enters the phacoemulsification tip, which can, in turn, control the speed with which pieces of lens come to the tip. A higher aspiration rate can be advantageous for a faster, more experienced surgeon, while a lower aspiration may be beneficial for beginning surgeons — or in scenarios such as a posterior capsular rupture.
- **Vacuum** is defined by how strongly the nucleus pieces are held by the phaco tip. Higher vacuum settings are often required during chopping maneuvers in order to establish strong purchase of the lens nucleus.
- Many phaco machines rely on **bottle height**, where the inflow of fluid into the eye is based on gravity fluidics. New-generation machines now use infusion pumps to maintain a chosen intraocular pressure in the eye and ensure stability of the anterior chamber.

These four factors are modulated based upon which step of cataract surgery you are performing. Your phaco machine alters these factors in its different modes, and you as the surgeon can titrate settings as needed during different points of the procedure to optimize your performance. Consider taking the time to sit down with a manufacturer's

representative of the platform you will be using during your training, and make sure to customize the settings as you perform more cases and develop new preferences. These reps are also invaluable when it comes to troubleshooting any unexpected errors that can occur during surgery.



Dr. Venkateswaran pictured right doing cataract surgery.

4. Know your patient and the instruments you need. Even before entering the operating room, it is critical to know your patient, their ocular history, the type of cataract they have and their refractive goals. Pay careful attention to identify any factors that could render your surgery more challenging, such as poor dilation, shallow anterior chamber, pseudoexfoliation, phacodonesis or prior ocular trauma or retina surgery. You must have a plan of attack if you identify any of these.

In addition, you should select a primary intraocular lens (IOL) to place in the capsular bag as well as backup lenses (such as a sulcus lens or anterior chamber lens) in the event there is a posterior capsular rupture. It is important to review how to calculate the power of these various types of lenses.

Prior to surgery, you should also mentally rehearse the steps of cataract surgery and the instruments you will use. Imagine where your paracentesis would be created, which type of viscoelastic would be injected, where the main wound would be created, what maneuvers you would use to create a circular capsulorhexis in case it begins to radialize, how to perform careful hydrodissection and hydrodelineation, what method of nuclear disassembly you will use and, lastly, how you will remove cortical material and inject the IOL implant.

It takes years for these seemingly straightforward steps to become second nature, but you will not regret it.

Nandini Venkateswaran, MD, is a cornea specialist in Durham, N.C., and joined YO Info editorial board in 2020.



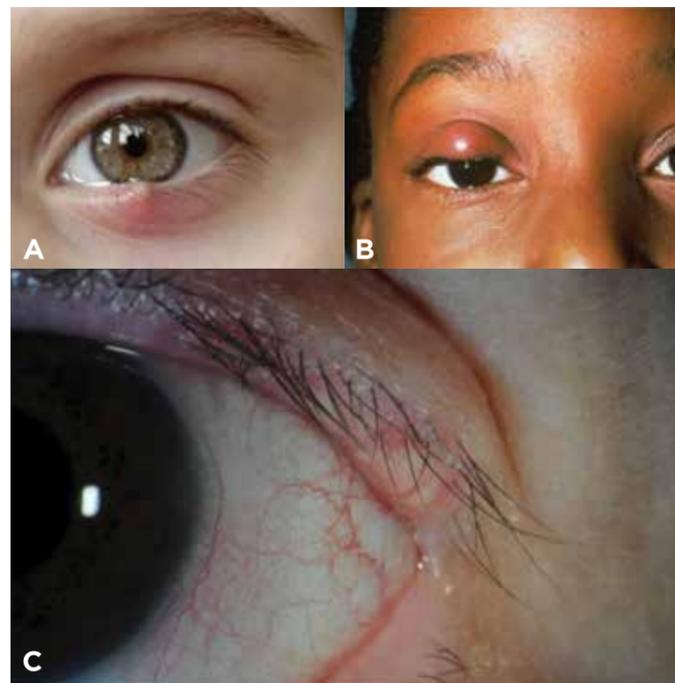
I Didn't See That Coming! 5 Dangerous Occult Diagnoses

One of the reasons I chose ophthalmology is that I am able to directly visualize the pathology — cataracts, macular edema, esotropia from a sixth nerve palsy, optic nerve edema.

Sometimes, however, the cause of pathology is not obvious. Being able to identify and diagnose these occult diseases may allow you to save your patient's vision or life.

1. That's not a sty!

Sebaceous carcinoma can mimic chalazia or styes. It can metastasize and sometimes needs to be treated with an orbital exenteration (removing the entire contents of the orbit!). You can discriminate a sebaceous carcinoma by looking for the yellow growth along the lid margins, flipping the eyelid and looking for spread to the palpebral conjunctiva and keeping a high index of suspicion in patients over the age of 50 with a "chalazion" that will not go away. Stage the cancer and treat with wide surgical excision and conjunctival map biopsy.

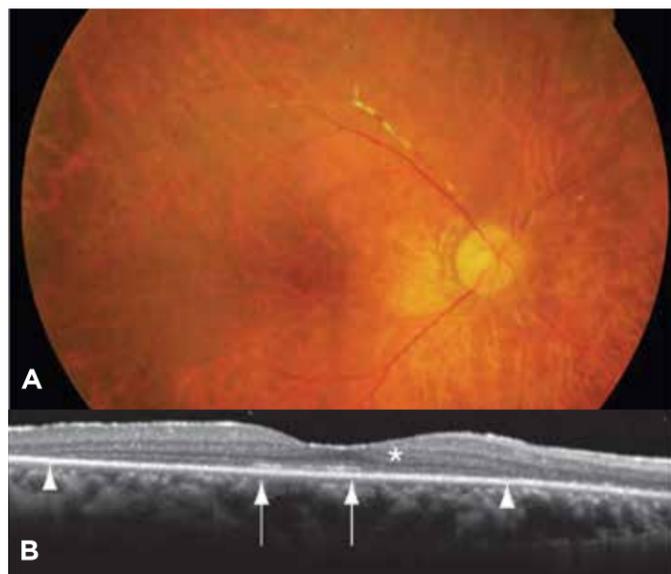


A) A sty is a red, sore lump near the edge of the eyelid. B) A chalazion is an enlargement of an oil-producing gland in the eyelid. C) Sebaceous carcinoma of the sebaceous glands (meibomian glands) in the eyelid.

2. What's going on back there?

Patients with painless vision loss over the past several weeks or months, including unabating photopsias and night blindness, can have cancer-associated retinopathy. Patients with melanoma-associated retinopathy can also acquire night blindness. These types of retinopathies are the result of autoantibodies to the eye from a nonocular cancer.

As an ophthalmologist, you can diagnose carcinomas, melanomas or recurrences of cancer and save a patient's life. Work up with visual fields (central or cecocentral scotomas) and an electroretinogram (attenuated or absent photopic and scotopic response).



Cancer-associated retinopathy (CAR). A) Color fundus photograph of CAR in a patient with ovarian carcinoma. Note the severe vascular attenuation without obvious pigmentary alterations. B) Fourier-domain cross-sectional optical coherence tomography (OCT) of an eye with CAR that shows hyperreflectivity (asterisk) and disruption (arrowheads) of the outer nuclear layer external limiting membrane as well as decreases in reflectivity of the inner segment ellipsoid zone (arrows). (Part A courtesy of John R. Heckenlively, MD; part B used with permission from Mesiwala NK, Shemonski N, Sandrian MG, et al. *J Ophthalmic Inflamm Infect.* 2015;5(1):53.)

3. Can't see 20/20, despite glasses?

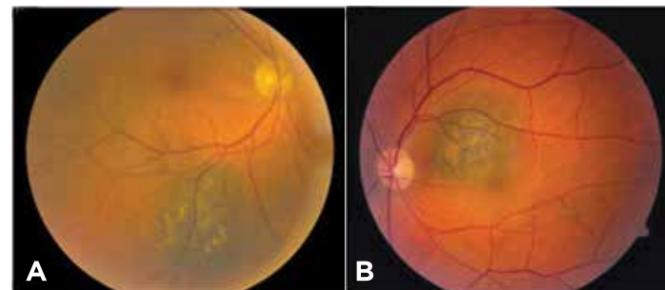
Keratoconus can now be treated early with corneal cross-linking, potentially avoiding a penetrating keratoplasty (full thickness corneal transplant). Pay attention to those young adults who may frequently rub their eyes and who, despite best correction, you can't get to 20/20. On retinoscopy (it's not just for kids!) look for an oil droplet appearance from the conical shape of the cornea or scissoring of the red reflex (instead of the light coming back as a straight line, it reflects as a V-shape). In advanced keratoconus, you can also see Munson's sign: a V-shaped deformation of the lower lid when

the eye is in downgaze.

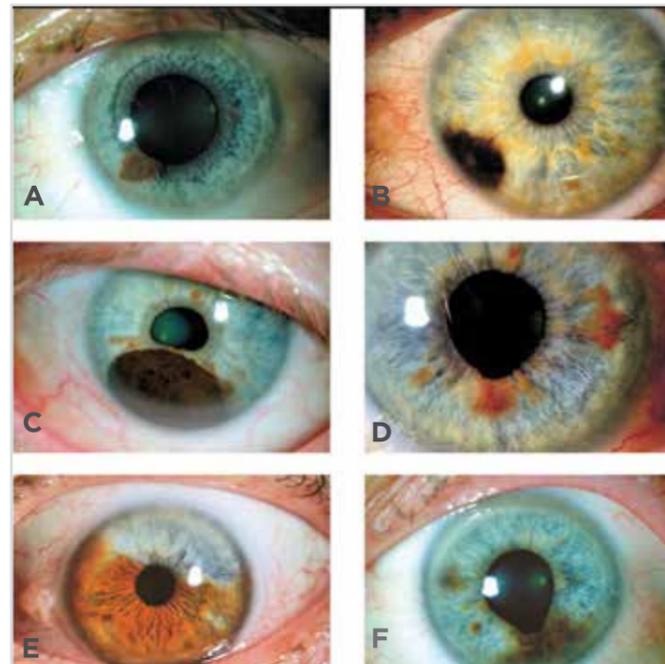
<https://www.youtube.com/watch?v=pO1PtM1oJKI>

4. Nevi, nevi, everywhere

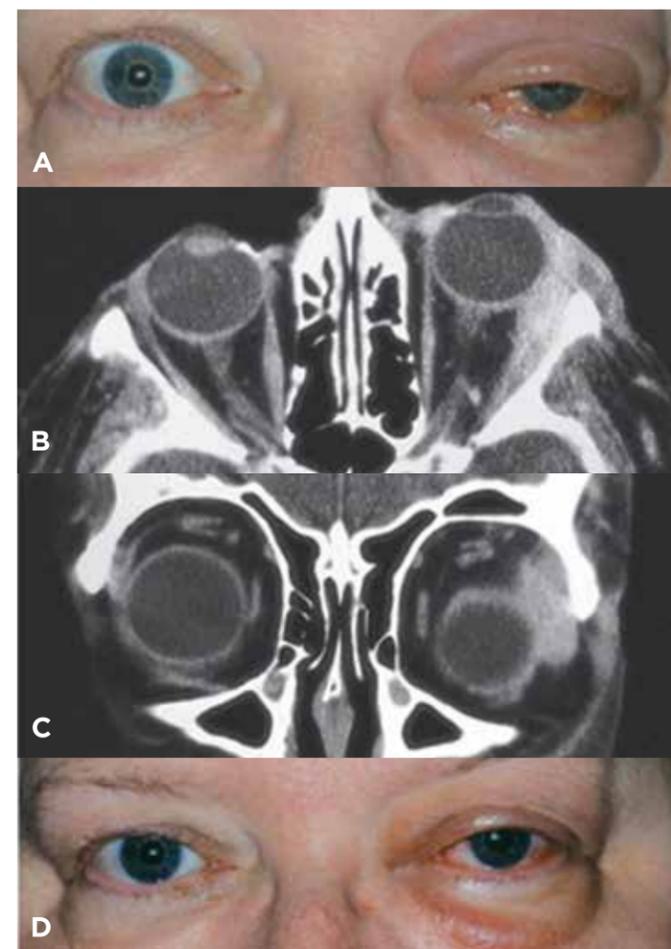
Like your skin, your eye has pigment — especially in the uvea (choroid, ciliary body and iris). Melanocytes can get out of control and cause nevi or cancer. Always examine your patient's iris and retina to look for these freckles or signs of melanoma. To distinguish between a choroidal nevus and a melanoma, Carol L. Shields, MD, has developed a mnemonic to help you: "**To Find Small Ocular Melanoma Using Helpful Hints Daily.**" Look for three or more of the following: **T**hickness > 2 mm, **F**luid (subretinal), **S**ymptoms, **O**range pigment (presence of), **M**argin within 3 mm of the optic disc, **U**ltrasonographic **H**ollowness, absence of surrounding **H**alo, absence of **D**rusen.



Differentiation. A) Choroidal nevus with drusen. B) Choroidal melanoma with orange pigment and subretinal fluid.



Iris nevus, clinical appearance. The lesion is generally only slightly raised from the iris surface and is a homogeneous brown. The chamber angle may be either uninvolved (A, D) or involved (B, C, E, F); the lesion may be flat (A, B, D-F) or nodular (C), single (A-C, E) or multiple (D, F); it may cause ectropion uveae (D, F, at 6 o'clock); or it may be diffuse (E; note undistorted pupil). (Courtesy of Tero Kivela, MD.)



Nonspecific orbital inflammation (NSOI). A) Photograph of a patient presenting with acute onset of inflammation of the left eyelid, ptosis, pain and left lateral rectus paresis. B) Axial CT scan shows left eye proptosis and hazy inflammatory swelling of lateral rectus and lacrimal gland, suggestive of a diagnosis of NSOI. C) Coronal CT scan shows inflammatory process adjacent to the lateral rectus. D) Photograph shows marked improvement of inflammatory changes in the patient after a 48-hour course of oral prednisone. (Parts A & D courtesy of Keith D. Carter, MD; parts B & C courtesy of Robert C. Kersten, MD.)

5. What's with all this swelling?

Nonspecific orbital inflammation (idiopathic orbital inflammation syndrome or IOIS) is a common diagnosis of exclusion marked by an edematous orbit. Disease can involve certain tissues — extraocular muscles, the lacrimal gland, anterior orbit, orbital apex — or be diffuse. Many patients improve with systemic steroid treatment. It's important to rule out orbital lymphoma, sarcoidosis, primary tumors, metastases, infections and arteriovenous fistulas.

Evan Silverstein, MD, is a pediatric ophthalmologist and an assistant professor of ophthalmology and associate resident program director at Virginia Commonwealth University in Richmond, Va.



9 Steps Closer to Surviving Call

Being on call as a first-year ophthalmology resident is a trial. Junior residents are exposed to a flood of patient scenarios and information. Here is a primer to make your time on call just a bit simpler.

1. Develop a routine early on. Learning any complicated task requires repetition. Developing good habits early on will leave you bulletproof from fatigue and save you time in the middle of the night. You can start with vision, pressure, pupils and drops. Have a protocol for patients you are dilating, those you are taking to the operating room and any particularly high-stake cases, such as ruptured globes. Just like a jet fighter pilot, have a printed checklist in your call bag.

2. Understand the risks. Ophthalmologists are in contact with infected mucosa and patients' airways daily. So be sure to use proper personal protective equipment, especially if you are facing a patient with "red eye" or a possibly infectious case. There is no reason to expose your patients or yourself to unidentified pathogens. N95 or similar respirator masks and face shields are the standard for protection from droplet-borne pathogens.

3. Be a good communicator. We know you're tired, but remember that so is everyone else. Make sure you confirm all instructions and write down your notes and instructions without acronyms for both the patient and the consulting team.

4. Perform your own exam and take your own history. Even if everyone has good intentions, you are responsible for this patient and their care. Take your own history and perform your own complete exam. Patients often change their story inadvertently, and physicians perform every exam a bit differently. Be sure to reduce medical errors by being thorough.

5. Bring your own supplies. When possible, have a call bag that is fully stocked. You know what happens when you assume. Don't assume that things are stocked and left in the place you like them to be. If you bring your own readers, drops and fluorescein strips, for instance, you will save yourself a lot of trouble on call.

6. Know the resources available to you. Every program and hospital has different resources available — and sometimes different ones during the day and at night. So get to know the ED personnel

and resources there as well as the physical space, the availability of lasers and, perhaps most importantly, who runs what and how. This will make you more efficient at examining the patient and communicating with the urgent care team.

7. Record everything. Write your notes and dictate right away. Not only is it fresh in your mind as soon as it's done, but other providers will be waiting for your note to complete the patient's visit. On the flip side, record the patient's name, date of birth, medical record number and their phone number. This way fewer patients will be lost to follow-up for their vision-threatening issues.

8. Familiarize yourself with the *Wills Eye Manual* — your new best friend. This resource will help you keep a thorough differential and make you shine in the eyes of your seniors. Consider reading before your physical exam to direct your experience with the patient. Once done, leave the room and make sure you have explored all pertinent findings before calling your senior residents.



9. Support your local dollar store and pick up a pair of +1.50 and +3.00 readers. Patients often don't bring their glasses during emergencies, and this way you can get a legitimate near vision for your exam. Often the visual acuity will drive your decision-making. Make sure to have a real metric to rely on.

Now get your sleep and know that you can wake up for a call confident that you are prepared!

James G. Chelnis, MD



To-Do List for the Young Ophthalmologist

The Academy offers educational programs, practice management resources and professional development catered to each level of training: from residency and fellowship, to early practice and academia. This to-do list will help you along the way.

Join the Academy Today

All physicians engaged in a full-time ophthalmology residency or fellowship training program in the United States or Canada are eligible for complimentary Academy membership for the duration of their training. Additionally, they are eligible to receive a complimentary American Academy of Ophthalmic Executives® (AAOE®) membership that provides resources for managing the business side of an ophthalmic practice (a \$299 value). Apply as a member in training at aao.org/member.

For the complete list of Academy and AAOE benefits, go to aao.org/benefits.

Enhance Your Clinical Education

- Learn from the #1 peer-reviewed journal in the specialty with your free subscription to the *Ophthalmology*® journal — aaojournal.org.
- Get the latest industry news and clinical roundups with free access to *EyeNet*® Magazine — aao.org/eyenet.
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- Stock up on the latest clinical education, patient education and practice management materials at the Academy Store — aao.org/store.

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.
- Support your state and federal advocacy efforts — secure.aao.org/aao/ssf-ophthpac-donations.
- Go to Washington, D.C., for the Mid-Year Forum and Congressional Advocacy Day in April 2021 — aao.org/myf.

Meet Up at AAO 2020: Vision

- Get ready for AAO 2020, the Academy's annual meeting in Las Vegas (Nov. 14-16) and Subspecialty Day (Nov. 13-14).
- Register on June 17 — aao.org/registration.
- Get the Mobile Meeting Guide — download it starting mid-September at aao.org/mobile.
- Learn about special programming just for YOs in Las Vegas — aao.org/yo.



- Attend Sunday's Young Ophthalmologist Program and Monday's "Welcome to the Real World of Ophthalmology: Reality 101 for Residents and Fellows."
- Visit the YO Lounge and attend the daily networking events.

Stay Connected with the Academy

Be sure to bookmark the YO and Residents landing pages — aao.org/yo and aao.org/residents.

Follow the Academy on Facebook, Twitter and Instagram — facebook.com/americanacademyofophthalmology, twitter.com/aao_ophth and instagram.com/aaoyeye.

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Demystifying the Visual Field

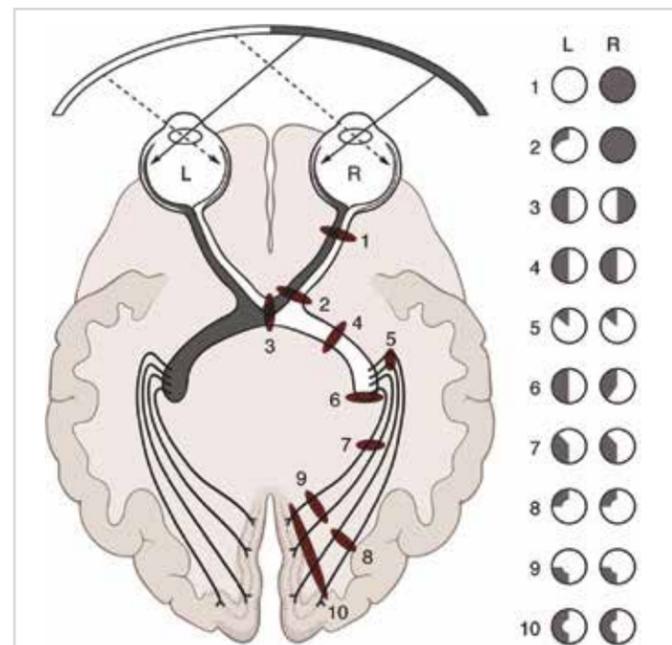
Visual field (VF) testing, although sometimes described as “torturous” by our patients, can be gratifying (and important) to interpret as an ophthalmologist, especially when done systematically.

This article provides quick pearls and a framework by which you can conquer interpretation of VFs and points you in the direction of relevant comprehensive resources.

First build a foundation. The Academy’s *Basic and Clinical Science Course™* (BCSC®) and EyeWiki (https://eyewiki.aao.org/Standard_Automated_Perimetry#Static_vs._Dynamic_Perimetry) are particularly useful resources for learning the types of perimetry (static vs. kinetic), stimulus size and luminance and the difference between common testing strategies. They also present the basics about the most common automated static perimetry machines like Humphrey and Octopus.

Take a VF yourself. This will allow you to sympathize with and explain the test to the patient if necessary. Don’t freak out if it’s not normal the first time. There is a significant “learning effect,” during which patients often become better test-takers over the first few VFs.

Familiarize yourself with the test printout from top to bottom. The EyeRounds article “Visual Field Testing: From One Medical Student to Another”



Examples of visual field defects along the visual pathway.

(<http://EyeRounds.org/tutorials/VF-testing/>) has a helpful diagram and explanation of reliability indices, deviation maps and summary outputs.

Always interpret VFs systematically to avoid oversight of clinical importance. Follow these five steps or develop your own approach.

1. Is the test reliable? Look out for long test duration and false positives, false negatives or fixation losses >20%. False positives may underestimate defects; false negatives may represent a patient’s inattention or a patient with significant VF loss.

2. Have you ruled out common artifacts? These include cloverleaf artifacts (suggestive of malingering or a decrease in attention during the test), lid artifacts (may improve with lid taping) and rim artifacts (related to lens positioning and/or head positioning). Be sure to check out the Academy’s BCSC for in-depth illustrations of the most common artifacts and other pertinent details.

If patients have persistently unreliable VFs, their reliability may improve with a larger stimulus and/or faster test strategy. Never underestimate the importance of explaining test instructions or informing the patient that the Humphrey test will pause if the response button is held down (in case they need a break).

3. Is there a significant defect? Look for a cluster of two or more defects, and look at the summary data, including mean deviation, pattern standard deviation, visual field index (VFI) and the glaucoma hemifield test. (EyeWiki does a great job of simplifying this.) It’s also important to identify any VF correlation with a structural defect (on the opposite side of the nerve). In most cases, a true functional VF defect will have a corresponding notch, pallor or edema on exam or optical coherence tomography (OCT).

4. Where is the pathology? Be sure to think outside the box and rule out life-threatening patterns that respect the vertical midline and/or are homonymous. This requires careful VF examinations of both eyes simultaneously. These patterns could signify pituitary or optic tract abnormalities that require urgent evaluation and/or treatment. (The EyeRounds article has a compilation of patterns to familiarize yourself with).

After these are ruled out, look for glaucomatous patterns such as a nasal step, arcuate scotoma, bjerrum scotoma or paracentral defects. (The BCSC has some great examples.)

5. Is there evidence of progression? Look for change yourself, by comparing the current VF to the last one as well as the baseline. If a change has occurred, it is important to understand when and what the ocular vital signs were at that time.

Computerized progression analysis is also important to consider but not to rely on. Event-based progression analysis such as guided-progression analysis highlights change from a prior or baseline VF. Trend-based progression analysis such as VFI calculates the rate of change. There are advantages and disadvantages to each method, and in many cases, only the physician can identify and exclude artifact.

If you believe there is progression on VF in a glaucoma patient, but no other red flags (intraocular pressure, OCT, disc hemorrhage), the gold standard is to confirm true progression with a repeat VF test.

Hopefully this framework will empower you to make the most of each visual field test — for patient care and also for your own education!

Natasha Nayak Kolomeyer, MD, is a glaucoma specialist at Wills Eye Hospital in Philadelphia and joined the YO Info editorial board in 2019.



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Mark Your Calendars! Registration and Hotels Open in June

June 17 (Academy and AAOE® members)
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Focus in on Las Vegas

AAO 2020
November 14 – 16

Subspecialty Day
November 13 – 14

AAOE® Program
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Don’t miss the visionary insight of *New York Times* bestselling author Malcolm Gladwell as he delivers the opening session keynote.

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Wellness in Residency: How to Work Hard and Play Hard

Residency will be the most rewarding experience in your long medical career; however, it will not be without significant challenges.

You will be expected to push yourself, care for complicated patients, work long hours, read volumes of texts and master new skills. Throughout these critical years, it's also important to remember to take care of yourself physically, emotionally and mentally — even if actual institutional policies may contradict this very notion of physician well-being.

Here are some practical tips for maintaining your physical, emotional and mental health.

Your Physical Health

Sleep when you can. Countless studies have demonstrated the harmful effects of sleep deprivation on pretty much everything required to succeed in residency — your mood, cognitive performance and motor skills. For example, moderate sleep loss is comparable to the psychomotor performance during moderate alcohol intoxication, while chronic partial sleep deprivation has similar harmful effects. Sleep when you can, even if it's just a power nap, and enjoy that martini effect when you are off duty!

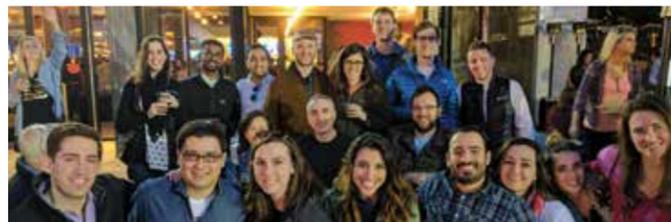
Exercise regularly and eat healthy. In the precious little time you are free from clinical work, take some time to exercise. The benefits of a healthy diet with routine physical activity are wide-ranging, from the prevention and treatment of medical conditions to psychological well-being. Practice what you have preached to all your patients since medical school. Go for a run, do yoga, hit the gym, swim, take a fitness class, or do anything that elevates your heart rate for 30 minutes or more. While you are at it, convince your co-residents to join you! Not only will you motivate each other to improve physical health, but it's also a good time to vent.

Your Emotional Health

Reach out to family, friends and colleagues.

Ophthalmology residency is emotionally draining. From day 1, you are expected to perform complete ophthalmic exams and diagnose and treat patients. You have to combine these expectations with the demands of your attendings to run efficient, high-quality clinics, all while trying to find some time to read and improve your knowledge base. Stay in

touch with your family and friends so that you can talk about your stressful days, difficult patients and challenging complications or simply listen to them. or simply listen to them. Sometimes hearing about what else is going on in the world can serve as a respite from your own day-to-day struggles. And don't forget to get together with your co-residents and do something fun. Go out, explore and make memories!



Use your vacations. You may be tempted to show your grit by skipping vacations, but you're not impressing anyone. Take these brief escapes to step away from work, reconnect with loved ones, reenergize, recuperate and return to residency with a renewed sense of motivation. You'll be stronger, smarter and better because of it.

Your Mental Health

Take advantage of professional mental help. You have a long, prosperous medical career ahead of you. The goal of residency is to develop not only a strong medical foundation, but also resiliency and the necessary habits to avoid burnout later in your career. Learn coping strategies from your co-residents and attendings. If you need more, seek professional help. Your residency program will provide you with resources, but feel free to go outside the system to find your own therapist, psychologist or psychiatrist to ensure confidentiality.

Many insurance policies also provide mental health coverage, so use it. Other resources are provided by the AMA, AAMC and ACGME (like their AWARE Program). Although there is often a stigma associated with mental health issues, being proactive now can improve your well-being in the long term.

Our humanity is what makes us great physicians and helps us connect with patients and deliver exceptional care. Nurture that humanity and take time for yourself so you can be as healthy and happy as you wish your patients to be.

Viraj J. Mehta, MD, MBA, is an oculoplastics surgeon in Washington, D.C., and joined the YO Info editorial board in 2020.



The Academy's Wellness Initiative

The Academy has a series of resources, tools and strategies designed to help you cope with stress, protect and restore your own well-being and preserve the joy of protecting sight. Check out aao.org/wellness for:

- Stories from your peers about the importance of physician wellness

- Self-assessment tools and wellness toolkits

- Strategies for practicing mindfulness and avoiding burnout

- Tips for detoxing from your digital devices

- Walkthroughs for yoga, stretching and better ergonomics

- Apps to help you recharge



Dr. Mehta on a trip to Tuscany during ophthalmology residency. Phones off and no emails for a week!

5 Tips to Achieve Financial Success During Residency

The COVID-19 pandemic has disrupted health care systems and economies around the world. With so much global turmoil, what safe and reliable financial advice should a resident follow?

Step 1: Residency Is an Investment

"Nothing of great value in this life comes easily." — Norman Vincent Peale

Physicians in the United States are among the highest-paid professionals in the world; however, residency requires long working hours with low pay, and student loan and credit card debt may cause financial insecurity. But stay positive. Lifetime earnings as a physician number in the millions and make every second of residency worth the effort.

Step 2: Make a Budget and Review It

"Beware of small expenses; a small leak will sink a great ship." — Benjamin Franklin

How much you save comes down to a simple equation: Revenue – Expenses = Income. So, each month, record all of your expenses and subtract this number from your income. Be sure to categorize expenses into fixed costs (e.g., rent, car payments) and variable costs (e.g., groceries, gas), review your budget periodically and reduce costs to increase your disposable income.

Step 3: Avoid Credit Card Debt

"Never spend your money before you have it." — Thomas Jefferson

Credit cards can earn points, miles or cash back, but they lose their value when balances are not paid in full each month. If you must keep a balance, consider a balance transfer. Many companies offer 0% interest deals that result in huge savings. Inquire if transaction fees can be waived.

Better still, refinance your debt. Banks see young physicians as worth the loan risk, even those with less than stellar credit histories. To apply for a mortgage or business loan in the future, always remember to build your credit history by making payments on time, every time.

Step 4: Contribute to Retirement Accounts

"It's not how much money you make, but how much money you keep, how hard it works for you and how many generations you keep it for." — Robert Kiyosaki

Retirement accounts come in two basic categories: 403(b)/457(b) and individual retirement accounts (IRA):

- 403(b)/457(b) accounts are offered through hospital employers. A percentage of each paycheck is invested, which grows tax free over time. The money is invested "pretax" (i.e., taxes due near retirement) or "after tax" (i.e., taxes are paid upfront). Conversions are possible. Some employers also offer a "match" of deposited funds. This is basically free money.

- IRAs offer similar pretax and after-tax options. They are available to all individuals and are not linked to your employer. Contributions cannot be withdrawn easily. Penalties are costly for early withdrawals.

Step 5: Buy Life Insurance When You're Young and Healthy

"The only certainties in life are death and taxes." — Mark Twain

Residency is the best time to buy life insurance coverage since it's likely the healthiest period of your life. There are three types of life insurance you should consider:

- Term life insurance pays in the event of death.
- Disability insurance pays if serious illness or injury occurs.
- Accident insurance offsets the costs of serious accident or injury.

Coverage is available through hospital group plans. For residents with children, life insurance is essential. Some companies offer residents locks on lifetime interest rates.

Keep in mind though that life insurance companies are not the same as health insurance companies: they can deny individuals based on preexisting medical conditions. So, again, in order to obtain the best coverage, there's no time like today when you're young and healthy!

In the end, be sure to maintain a budget, keep debts low, invest and purchase life insurance. Most importantly, stay positive! Residency is about learning how to become a physician. This experience includes more than just the procurement of raw clinical acumen.

"Experience is simply the name we give our mistakes." — Oscar Wilde

Andrew W. Francis, MD, is a retina specialist in Chicago, Ill., and joined the YO Info editorial board in 2020.



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The Academy Is Here to Help

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