

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

WELCOME TO OPHTHALMOLOGY: TIPS FOR GREATNESS

We are all excited to welcome you into ophthalmology! Our profession is rewarding – it will challenge you for your entire career. You will have opportunities to give back to your patients, hospital, community and even the world. Starting off as a resident is a daunting task. You must have so many questions buzzing through your mind. I will address four really common ones.

What makes a great resident great?

A great ophthalmology resident is hard to define, but when you see one, you know it. A great resident has infectious enthusiasm for our profession and the science of the eye. She enjoys working with patients and always wants more clinical and surgical opportunities with chances to learn. A great resident makes our patients feel cared for and special. He learns from his mistakes and moves on. Great teachers, great residents create a sea of medical students interested in ophthalmology. A great resident gets things done when she said she would with no fanfare: notes, work hour requests, faculty evaluations and other important administrative jobs. He adds value to the faculty, department, hospital and community. A great resident gives more than he or she takes. And like a good camper, a great resident leaves our program better than when he or she arrived.

What do I read?

Start reading as soon as you match—but what? Get the big picture first and fill in the details later. Imagine building a tree of ophthalmic knowledge with the branches first and adding the detailed leaves later. I love the strategy of our former resident, Toby Taylor (Knoxville, TN). Find an interesting picture in an atlas (e.g., EyeRounds.org or *Spaltons*), such as herpes kerati-

(Left to Right) Residency Director, Thomas A. Oetting, MD, with University of Iowa residents Justin Risma, MD; Angela McAlister, MD; Pavlina Kemp, MD; Elizabeth Gauger, MD; and Matthew Weed, MD.



Welcome to Ophthalmology: Tips for Greatness	1
Top Ophthalmology Resident Apps	2
OKAP Reading Schedule	3
In the Pursuit of Fellowship	6
Learning the Lingo: Ophthalmic Abbreviations	7
You Earned It – The Privilege to Protect Sight	8
Resident's Timeline	8
Top Resources for Written Boards: (aka) OKAP Exam	10
Good Hands, Cool Head: 5 Tips to Becoming a Surgical Superstar	11
Retinoscopy 101	12
Top 10 Eye Emergencies	13
The 8 Point Eye Exam	15

tis, and then use the *Wills Eye Manual* to attach a practical strategy to each disease. Keep it fun and practical at first. Get images in your mind. Get an idea of the differential diagnosis and basic therapy options. After you go through the atlas/Wills a few times, then move into the basic science manuals and fill in the details.

How do I get my hands going – will I be a good surgeon?

I have helped a bunch of residents through their first case and then watched them develop. Some start fast, some start slow. Some flatten out after 50 cases and don't improve much and some improve until their very last case. But everybody seems to make it. If you happen to be a slow starter (like me 25 years ago), don't give up in despair. You may well finish residency as a great surgeon with a rapid learning curve at the end.

As you learn surgery, you put your patients at risk. Tough truth. Deal with it! The question is how to limit that risk and add value to the patient who has agreed to let you operate on them. In most programs the surgery comes in the third year. But I suggest starting from the beginning of residency, getting both hands going under the microscope in your practice lab, minor room or OR. Suture, phaco or write your name on rice. Just get those hands and eyes synched up under the scope. Use both hands. Assist as much as you can. Take your program's organized wet lab and simulation sessions seriously. Structured learning limits your risk to our patients.

How do I budget my time?

This is the hardest question in life. Spouse, kids, family, fitness, health, hobbies, training – something has to give. No one can do it all, not even you. You have to sort it out day by day. Be efficient and read every day. Maybe combine reading with the treadmill (wish I did that). You may have to give up reality TV (harsh). For some the best time will be when your spouse or kids are sleeping. For others the best place to read might be in the department early in the day or after the day is done. The unwavering truth is that several real and important milestones come up during this first year of residency. The first is seeing a patient in clinic with close supervision. The second is seeing a patient all by your lonesome on first call. The third is taking the OKAP exam. These milestones are coming and preparation has to be a high priority. You can do it!

We are fortunate to have the brightest medical students join our programs. Enjoy your residency, treasure your patients, and add value to your program and our profession.

Thomas Oetting, MD is currently a professor of clinical ophthalmology and the residency program director at the University of Iowa. He serves as chief of ophthalmology and deputy director for surgery at the Iowa City VAMC. Dr. Oetting has won the University of Iowa's Resident Teaching Award five times. He writes and lectures on cataract surgery and medical education.



TOP OPHTHALMOLOGY RESIDENT APPS

Virtually everyone has a smartphone and/or a tablet with them while they work. You can leverage all that computing power in your palm with a few powerful apps! Here are a few of the top ophthalmology apps to make your life a little easier:

1. EyeHandbook. This application is almost a virtual call bag. You can use it for acuity testing, fixation targets for children, color vision testing or as an Optokinetic nystagmus (OKN) drum, all under just the testing heading! This app also offers instant access to an atlas of ophthalmic photographs, a quick reference manual, calculators for glaucoma risk and, conversion to and from logMAR, just to name a few of its best features. Did I mention it's free?

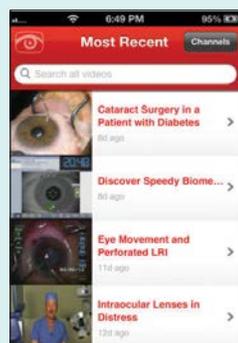
2. Eyetube. This app gives you a growing library of ophthalmology videos at your fingertips. Watch experts perform complicated cataract extractions and learn the ins and outs of procedures in every subspecialty.

3. Inklings. If you have any texts that utilize expertconsult.com, you can use the free Inklings app to make your textbook into a free e-book accessible from any device! Save your notes and maintain quick access to all of your references with this app.

4. Medscape. Get instant access to very detailed information on all drugs, and innumerable articles on disease states. It fea



1.



2.



3.



4.



5.

OKAPs READING SCHEDULE



Welcome to residency. Now start studying! It's not really that bad, and March can seem a long way off, but starting a studying/reading schedule for the OKAPs early can help it seem less overwhelming in February.

To assist your studies, below is a reading schedule for you, using the BCSC books starting the second week of the 2015-2016 academic year and finishing in late February

2016. This will leave you about a month to review other material and work on questions. Note: this proposed schedule does not include reading the *Update on General Medicine* book, which is still tested.

The highest-yield books are scheduled for earlier on in the year, which will also be helpful clinically for the more junior resident. Good luck!

2015

7/12 *Fundamentals and Principles of Ophthalmology*
Section 2 (pages 1–128)

Begin with: 1 Orbit and Ocular Adnexa

7/18 **End after:** 4 Ocular Development; Genetic Cascades and Morphogenic Gradients: Future Directions

18 PAGES/DAY

7/19 *Fundamentals and Principles of Ophthalmology*
Section 2 (pages 131–269)

Begin with: III Genetics; Introduction

7/25 **End after:** 13 Retina; Retinal Electrophysiology

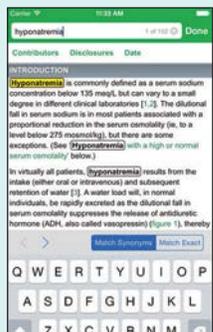
20 PAGES/DAY



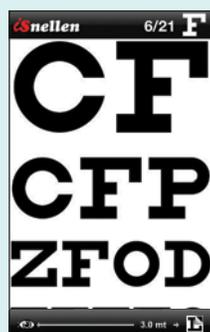
tures a library of articles on procedures, a pill identifier and many more features that cover all of medicine. You can select a specific medical specialty to only be shown new articles and news in your field. A must have.

5. Epocrates. Very similar profile to Medscape. If you are not familiar with one or the other, download them both to see which you like best. Epocrates has been around longer, but clearly they are neck-in-neck regarding features today.

6. Up-To-Date. Not everyone will have open access to this site or app, depending on the agreement your institution has in place.



6.



7.



8.

However, if you do, you will have access to the latest, summarized information in medical literature. Though it does not offer information on drugs, its medical summaries are very detailed. And, you can use it to collect free CME credits just by accessing articles when you complete your training!

7. iSnellen. This free app offers an adjustable Snellen acuity chart depending on how far it is held away from the patient. For 99 cents, you can remove the banner ad or unlock other features.

8. Omnio/Skyscape. If you would rather have an e-book version of *Wills Eye Manual* or other books that do not offer online versions through expertconsult.com, you can buy them on either Omnio or Skyscape. This is for trainees who are serious about keeping everything within reach at all times.

James G. Chelnis, MD, is currently the oculoplastics fellow at Vanderbilt University and in his first year of the Tennessee American Society of Ophthalmic Plastic and Reconstructive Surgery program. He has been a member of the YO Info editorial board for over three years and is also engaged in EyeWiki.org as an editor for the oculoplastics section. Dr. Chelnis is a contributor to the ASOPRS Oncology Database and has a strong interest in clinical and translational research.



7/26 <i>Fundamentals and Principles of Ophthalmology</i> Section 2 (pages 271–389) Begin with: 14 Retinal Pigment Epithelium	17 PAGES/DAY
8/1 Anatomical Description End after: Study Questions Answers (END OF BOOK)	
8/2 <i>Lens and Cataract</i> Section 11 (pages 1–142) Begin with: General Introduction; Objectives	20 PAGES/DAY
8/8 End after: 7 Surgery for Cataract; Outcomes of Cataract Surgery	
8/9 <i>Lens and Cataract</i> Section 11 (pages 143–234) Begin with: 8 Complications of Cataract Surgery	13 PAGES/DAY
8/15 Corneal Complications End after: Study Questions Answers (END OF BOOK)	
8/16 <i>Glaucoma</i> Section 10 (pages 1–137) Begin with: General Introduction; Objectives	20 PAGES/DAY
8/22 End after: 5 Angle-Closure Glaucoma; Drug-Induced Secondary Angle-Closure Glaucoma	
8/23 <i>Glaucoma</i> Section 10 (pages 139–231) Begin with: 6 Childhood Glaucoma; Classification	13 PAGES/DAY
8/29 End after: Study Questions Answers (END OF BOOK)	
8/30 <i>Retina and Vitreous</i> Section 12 (pages 1–156) Begin with: General Introduction; Objectives	22 PAGES/DAY
9/5 End after: 7 Other Retinal Vascular Diseases Terson Syndrome	
9/6 <i>Retina and Vitreous</i> Section 12 (pages 157–288) Begin with: 8 Retinopathy of Prematurity;	19 PAGES/DAY
9/12 Introduction End after: 15 Retinal Detachment and Predisposing Lesions. Macular Holes in High Myopia	
9/13 <i>Retina and Vitreous</i> Section 12 (pages 289–380) Begin with: 16 Diseases of the Vitreous and Vitreoretinal Interface	13 PAGES/DAY
9/19 End after: Study Questions Answers (END OF BOOK)	
9/26 <i>External Disease and Cornea</i> Section 8 (pages 1–169) Begin with: General Introduction; Objectives	24 PAGES/DAY
9/26 End after: 6 Ocular Immunology; Diagnostic Approach to Immune-Mediated Ocular Disorders	
9/27 <i>External Disease and Cornea</i> Section 8 (pages 171–335) Begin with: 7 Diagnosis and Management of	24 PAGES/DAY
10/3 Immune-Related Disorders of the External Eye End after: 12 Clinical Approach to Depositions and Degenerations of the Conjunctiva, Cornea, and Sclera: Endothelial Manifestations	
10/4 <i>External Disease and Cornea</i> Section 8 (pages 337–448) Begin with: 13 Clinical Aspects of Toxic and	16 PAGES/DAY
10/10 Traumatic Injuries of the Anterior Segment; Injuries Caused by Temperature and Radiation End after: Study Questions Answers (END OF BOOK)	
10/11 <i>Orbit, Eyelids, and Lacrimal System</i> Section 7 (pages 1–172) Begin with: General Introduction; Objectives	25 PAGES/DAY
10/17 End after: 10 Classification and Management of Eyelid Disorders; Benign Adnexal Lesions	
10/18 <i>Orbit, Eyelids, and Lacrimal System</i> Section 7 (pages 172–306) Begin with: 10 Classification and Management	19 PAGES/DAY
10/24 of Eyelid Disorders; Benign Melanocytic Lesions End after: Study Questions Answers (END OF BOOK)	
10/25 <i>Ophthalmic Pathology and Intraocular Tumors</i> Section 4 (pages 1–143) Begin with: General Introduction; Objectives	21 PAGES/DAY
10/31 End after: 10 Vitreous — Intraocular Lymphoma	
11/1 <i>Ophthalmic Pathology and Intraocular Tumors</i> Section 4 (pages 145–272) Begin with: 11 Retina and Retinal Pigment Epithelium	18 PAGES/DAY
11/17 End after: 17 Melanocytic Tumors—Iris Melanoma	
11/8 <i>Ophthalmic Pathology and Intraocular Tumors</i> Section 4 (pages 273–375) Begin with: 17 Melanocytic Tumors; Melanoma	15 PAGES/DAY
11/14 of the Ciliary Body or Choroid End after: Study Questions Answers (END OF BOOK)	
11/15 <i>Pediatric Ophthalmology and Strabismus</i> Section 6 (pages 1–101) Begin with: General Introduction; Objectives	23 PAGES/DAY
11/21 End after: 9 Exodeviations; Evaluation	
<i>Refractive Surgery</i> Section 13 (pages 1–55) Begin with: General Introduction; Objectives	
End after: 3 Incisional Corneal Surgery; Arcuate Keratotomy and Limbal Relaxing Incisions	

11/22 Pediatric Ophthalmology and Strabismus

Section 6 (pages 101–201)

- 11/28** **Begin with:** 9 Exodeviations — Classification
End after: 17 Eyelid Disorders — Congenital Ptosis

Refractive Surgery

Section 13 (pages 55–106)

Begin with: 3 Incisional Corneal Surgery — Instrumentation**End after:** 6 Photoablation — Complications and Adverse Effects; Sterile Infiltrates

22 PAGES/DAY

11/29 Pediatric Ophthalmology and Strabismus

Section 6 (pages 201–282)

Begin with: 17 Eyelid Disorders;

- 12/5** Marcus Gunn Jaw-Winking Syndrome
End after: 22 Pediatric Glaucomas; Primary Congenital Glaucoma

Refractive Surgery

Section 13 (pages 106–149)

Begin with: 6 Photoablation — Complications and Side Effects; Corneal Haze**End after:** 8 Intraocular Surgery; Light-Adjustable Intraocular Lenses

18 PAGES/DAY

12/6 Pediatric Ophthalmology and Strabismus

Section 6 (pages 282–382)

Begin with: 22 Pediatric Glaucomas; Juvenile

- 12/12** Open-Angle Glaucoma

End after: 28 Ocular Manifestations of Systemic Disease; Inborn Errors of Metabolism**Refractive Surgery**

Section 13 (pages 153–195)

Begin with: 9 Accommodative and Nonaccommodative Treatment of Presbyopia; Introduction**End after:** 11 Considerations After Refractive Surgery; Glaucoma After Refractive Surgery

21 PAGES/DAY

12/13 Pediatric Ophthalmology and Strabismus

Section 6 (pages 383–427)

Begin with: 28 Ocular Manifestations of Systemic

- 12/19** Disease; Familial Oculorenal Syndromes
End after: Study Questions Answers (END OF BOOK)

Refractive Surgery

Section 13 (pages 197–236)

Begin with: 12 International Perspectives in Refractive Surgery; Introduction**End after:** Study Questions Answers (END OF BOOK)

12 PAGES/DAY

David E. Vollman, MD, MBA, is an assistant professor of Ophthalmology and Visual Sciences in the Washington University School of Medicine. After completing an MD/MBA dual-degree program at Ohio State University College of Medicine, he completed his ophthalmology residency at the Washington University/Barnes-Jewish Hospital/St. Louis Children's Hospital Consortium Program, where he served as chief resident.

**SMALL BREAK FOR THE HOLIDAYS**

12-20-2015 TO 1-2-2016

2016**1/3 Intraocular Inflammation and Uveitis**

Section 9 (pages 1–190)

Begin with: General Introduction; Objectives

- 1/9** **End after:** 6 Noninfectious Ocular Inflammatory Disease; Behçet Disease

27 PAGES/DAY

1/10 Intraocular Inflammation and Uveitis

Section 9 (pages 191–326)

Begin with: 7 Infectious Ocular Inflammatory

- 1/16** Diseases Viral Uveitis
End after: Study Questions Answers (END OF BOOK)

19 PAGES/DAY

1/17 Neuro-Ophthalmology

Section 5 (pages 1–145)

Begin with: General Introduction; Objectives

- 1/23** **End after:** 4 The Patient With Decreased Vision—Classification and Management; Posterior Optic Neuropathies

21 PAGES/DAY

1/24 Neuro-Ophthalmology

Section 5 (pages 145–275)

Begin with: 4 The Patient With Decreased Vision:

- 1/30** Classification and Management; Optic Atrophy
End after: 11 The Patient With Eyelid or Facial Abnormalities. Disorders of Overactivity of the Seventh Nerve

19 PAGES/DAY

1/31 Neuro-Ophthalmology

Section 5 (pages 277–368)

Begin with: 12 The Patient With Head, Ocular, or Facial Pain; Evaluation of Headache

- 2/6** **End after:** Study Questions Answers (END OF BOOK)

13 PAGES/DAY

2/7 Clinical Optics

Section 3 (pages 1–129)

Begin with: General Introduction; Objectives

- 2/13** **End after:** 3 Clinical Refraction; The Prentice Rule and Bifocal Lens Design

18 PAGES/DAY

2/14 Clinical Optics

Section 3 (pages 129–251)

Begin with: 3 Clinical Refraction; Occupation and Bifocal Segment

- 2/20** **End after:** 7 Optical Instruments and Low Vision Aids; Surgical Microscope

18 PAGES/DAY

2/21 Clinical Optics

Section 3 (pages 252–337)

Begin with: 7 Optical Instruments and Low

- 2/27** Vision Aids; Geneva Lens Clock
End after: Study Questions Answers (END OF BOOK)

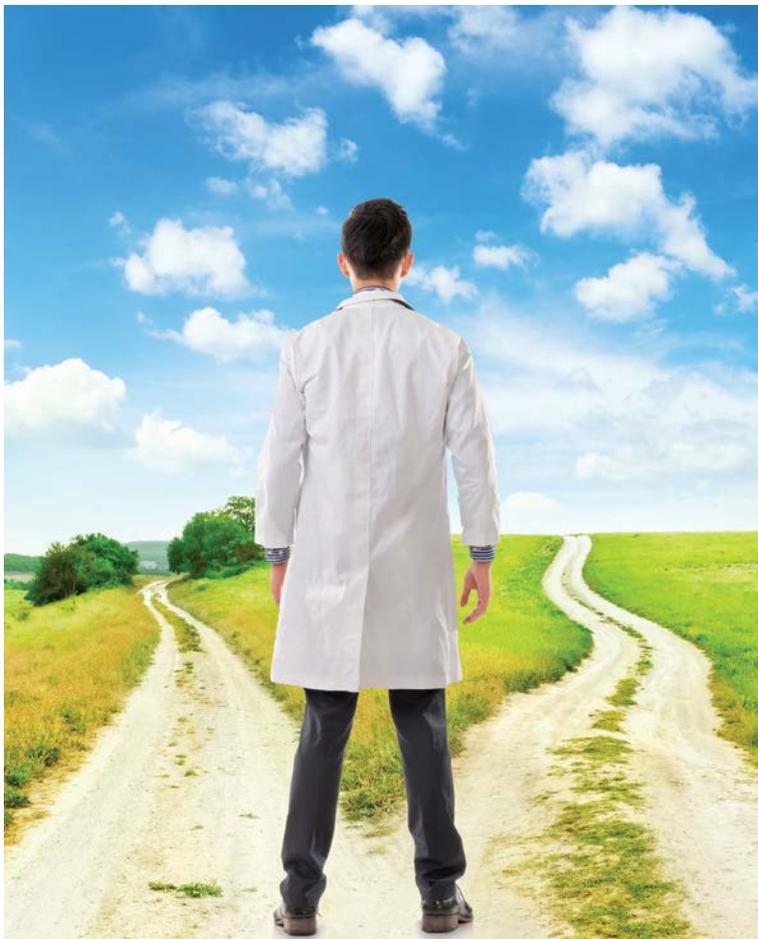
12 PAGES/DAY

IN THE PURSUIT OF FELLOWSHIP

Fellowship or no? That is the question that hounds ophthalmology residents from day one. Don't let this concern consume you during your first year, when you have diverse clinical skills and knowledge to master. Undoubtedly worry will still find its way in, so here are some statistics and guidelines on the process.

Approximately 65 percent of U.S. ophthalmology residents apply for a fellowship. This percentage has nearly doubled over the last fifteen years. Consequently comprehensive ophthalmologists may become increasingly valued, particularly in certain health systems. Do not assume that you must pursue fellowship to obtain the career you want.

Residents choose to pursue fellowship for many reasons. Some choose subspecialization due to a particularly strong clinical or research interest. Others may find fellowship training of strategic value in certain practice settings, such as some urban and academic environments. Still others may select a fellowship to augment their residency training in anticipation of a career in comprehensive ophthalmology. Extended subspecialty training has costs as well—it consumes time that could otherwise be spent developing your practice, and you can intentionally or unintentionally distance yourself from aspects of comprehensive ophthalmology.



Of note, the Accreditation Counsel for Graduate Medical Education (ACGME) does not accredit subspecialty training within ophthalmology. This means that government funds for graduate medical education cannot be used and thus you will likely be paid less in fellowship than in residency. All clinical fellowships require a completed residency and U.S. medical license. In recent years the Association of University Professors of Ophthalmology (AUPO) has attempted to standardize curricula and education quality through their Fellowship Compliance Committee.

Numbers vary annually, but the most fellowship positions are offered in retina (in the 130s), followed by cornea (90s), glaucoma (70s), pediatrics (60s), oculoplastics (40s), and neuro-ophthalmology (20s). There are also a few positions in uveitis, ocular pathology and international ophthalmology. Surgical retina and most oculoplastics are two year fellowships, whereas the others are usually one year. In 2014, 82% of fellowship positions were filled and the average applicant applied to twenty programs.

The formal application process for most fellowships starts in June to July between the second and third years of residency. Applications are submitted during the summer and interviews typically occur between October and December. A match day similar to that of residency occurs in mid-December, and fellowship starts the following July.

Oculoplastics is an outlier in several ways. Almost all programs are accredited by the American Society of Ophthalmic Plastic and Reconstructive Surgeons (ASOPRS) and offer a more direct route to membership in that organization. Applicants typically submit their applications in the fall of the second year of residency (rather than the third), interview over the winter and match in the early spring.

So, just as you did for your residency applications, work backwards to determine when you need to make a decision on fellowship. Give yourself a couple months before the application deadline to gather recommendations and marshal all the aspects of a strong application. Prior to that, make sure your general ophthalmic education comes first. The decision to pursue or not pursue post-residency training is a significant one, but fellowship offers little without a strong foundation from residency.

D. Wilkin Parke III, MD, is a vitreo-retinal specialist with VitreoRetinal Surgery, PA, in Minneapolis. He completed his residency and surgical retina fellowship at Bascom Palmer Eye Institute in Miami. During his last year of fellowship, he was chief resident.



LEARNING THE LINGO: OPHTHALMIC ABBREVIATIONS

Given the amount of abbreviations in the ophthalmic lexicon, one might think ophthalmologists speak purely in code. To help you avoid the confusion and steer away from the embarrassing mistake, this cheat sheet includes more than 100 basic abbreviations you'll need to know as you learn the professional lingo.

AC	Anterior chamber	HM	Hand motion	POHS	Presumed ocular histoplasmosis syndrome
ALT	Argon laser trabeculoplasty	HSV	Herpes simplex virus	PPA	Peripapillary atrophy
APD, RAPD	(Relative) Afferent pupillary defect	HVF	Humphrey visual field	PPL	Pars plana lensectomy
ARMD, AMD	Age-related macular degeneration	HZO	Herpes zoster ophthalmicus	PPV	Pars plana vitrectomy
ASC	Anterior subcapsular cataract	IOL	Intraocular lens	PRK	Photorefractive keratectomy
BDR	Background diabetic retinopathy	IOP	Intraocular pressure	PRP	Panretinal photocoagulation
BRAO	Branch retinal artery occlusion	IRMA	Intraretinal microvascular abnormality	PS	Posterior synechiae
BRVO	Branch retinal vein occlusion	KPs	Keratic precipitates	PSC	Posterior subcapsular cataract
BSCL	Bandage soft contact lens	LASIK	Laser in situ keratomileusis	PTK	Phototherapeutic keratectomy
CACG	Chronic angle-closure glaucoma	LHT	Left hypertropia	PVD	Posterior vitreous detachment
cC	With correction	LP	Light perception	PVR	Proliferative vitreoretinopathy
CE/IOL	Cataract extraction with intraocular lens implant	LPI	Laser peripheral iridotomy	PXG	Pseudoexfoliation glaucoma
CF	Count fingers	MA	Microaneurysm	PXS	Pseudoexfoliation syndrome
C₃F₈	Perfluoropropane (gas)	MH	Macular hole	RAPD	Relative afferent pupillary defect
CL	Contact lens	MP	Membrane peeling or macular pucker	RD	Retinal detachment
COAG	Chronic open-angle glaucoma	MR	Manifest refraction	RHT	Right hypertropia
CNVM, CNV	Choroidal neovascular membrane	NLP	No light perception	RK	Radial keratotomy
CPC	Cyclophotocoagulation	NPDR	Nonproliferative diabetic retinopathy	ROP	Retinopathy of prematurity
CRAO	Central retinal artery occlusion	NS	Nuclear sclerosis	RP	Retinitis pigmentosa
CRS	Chorioretinal scar	NVA	Neovascularization of the angle	RPE	Retinal pigment epithelium
CRVO	Central retinal vein occlusion	NVD	Neovascularization at disc	RRD	Rhegmatogenous retinal detachment
CSME	Clinically significant macular edema	NVE	Neovascularization elsewhere	SB	Scleral buckle
CSR, CSCR	Central serous (chorio) retinopathy	NVG	Neovascular glaucoma	sC	Without correction
DCR	Dacryocystorhinostomy	NVI	Neovascularization of iris (rubeosis iridis)	SF₆	Sulfur hexafluoride (gas)
DES	Dry eye syndrome	OD	Oculus dexter (right eye)	SLE	Slit-lamp examination
DR	Diabetic retinopathy	OGR	Open globe repair	SLT	Selective laser trabeculoplasty
DSAEK	Descemet stripping automated endothelial keratoplasty	OS	Oculus sinister (left eye)	SO, SIO	Silicone oil
E	Esophoria	OU	Oculus uterque (both eyes)	SRF	Subretinal fluid
ECCE	Extracapsular cataract extraction	PACG	Primary angle-closure glaucoma	SRH	Subretinal hemorrhage
EKC	Epidemic keratoconjunctivitis	PAS	Peripheral anterior synechiae	TA	Tonometry by applanation
EL	Endolaser	PC	Posterior chamber	TBUT	Tear breakup time
ERM	Epiretinal membrane	PCO	Posterior capsule opacity	TRD	Tractional retinal detachment
ET	Esotropia	PDR	Proliferative diabetic retinopathy	VA	Visual acuity
E(T)	Intermittent esotropia	PED	Pigment epithelial detachment	VF	Visual field
FAX, AFx	Fluid-air exchange	PEE	Punctate epithelial erosion	VH	Vitreous hemorrhage
FTCF	Full to count fingers	PERRL(A)	Pupils equal, round, reactive to light and accommodation	X	Exophoria
		PH	Pinhole	XT	Exotropia
		PK, PKP	Penetrating keratoplasty	X(T)	Intermittent exotropia
		POAG	Primary open-angle glaucoma	YAG	Yttrium-aluminum-garnet laser used in posterior capsule opacity; also referred to as a neodymium (Nd): YAG laser

David E. Vollman, MD, MBA

YOU EARNED IT – THE PRIVILEGE TO PROTECT SIGHT

Congratulations on beginning your career in ophthalmology! Think about the many steps you took to arrive at this point. You studied through college, completing the necessary pre-medical requirements and the formidable MCAT. You wrote countless essays about why you wanted to become a physician. After being accepted to medical school, you spent four challenging years learning the art and science of practicing medicine. Each of those years was filled with innumerable hours studying, frequent exams, physical and emotional challenges on the wards and excelling on the numerous USMLE Step exams. Towards the end of medical school, again, you wrote essays and spent a significant amount of time, money and energy applying to and interviewing for ophthalmology residency. Finally, you just completed a long intern year!

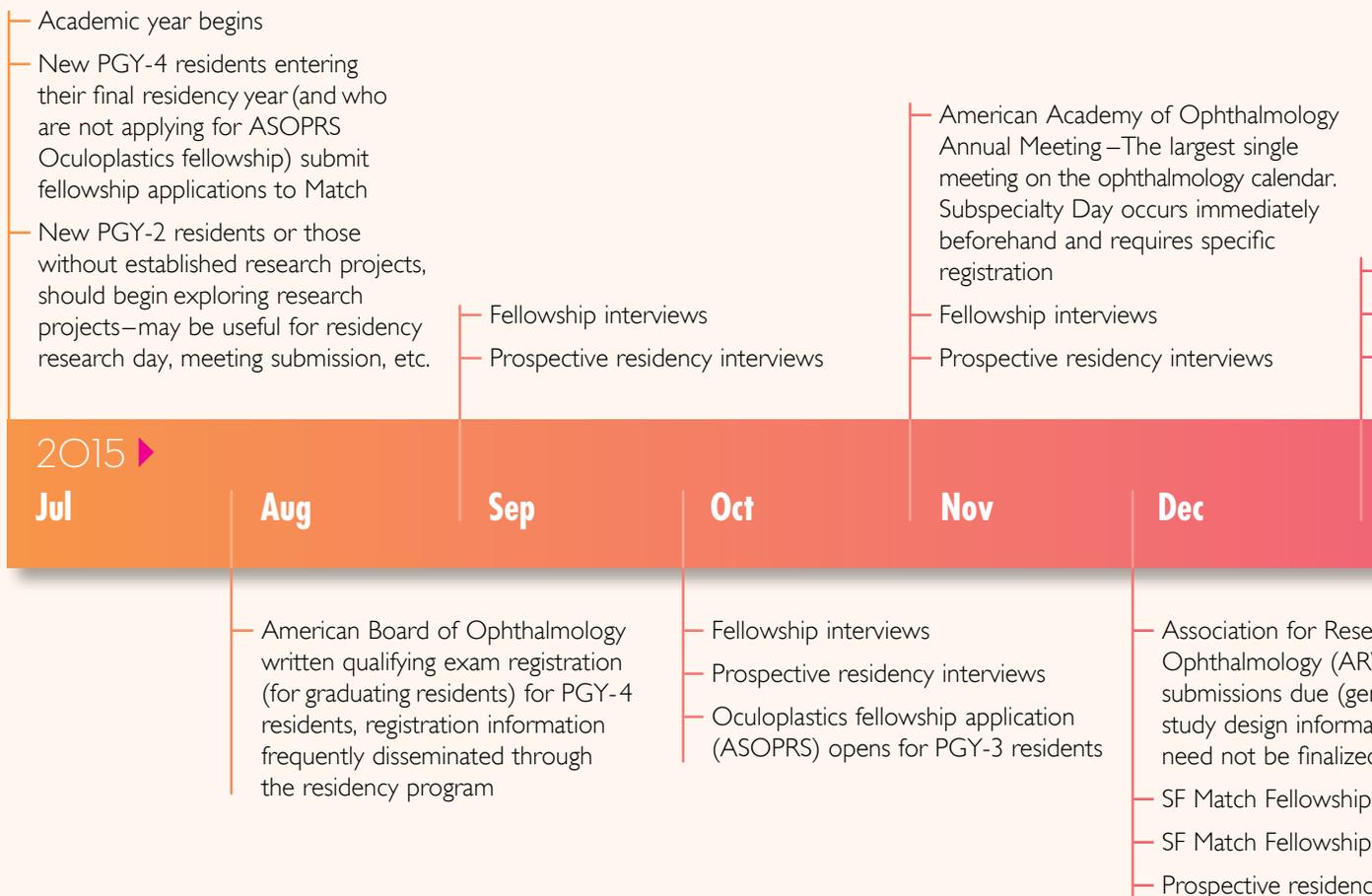
Over the next five years of your career, you will continue to take steps towards your goal, diligently studying a field mostly unknown to you now. You will take yearly OKAP exams and possibly complete a fellowship. You will spend a large amount of money and significant stress on both the written and oral exams to become a board-certified ophthalmologist. And at the end of this rigorous journey spanning over a decade, you will have earned the privilege to protect eyesight.



Lindsay Rhodes, MD (center) with Alabama Academy of Ophthalmology Advocacy Ambassadors Michael Neimkin, MD (left) and Mark Hill, MD (right).

But then you must take another step: step into the role of leader of the eye care team, protecting your patients' sight in the clinic, in the operating room AND in the public domain. While the majority of residency will be spent learning the skills to care for patients clinically and surgically, it is equally as important to learn about advocating for patients in the public

RESIDENTS' TIMELINE





domain. One of the most exciting ways to learn about advocacy is to participate in the American Academy of Ophthalmology's Advocacy Ambassador Program. Every April, the Academy holds the Mid-Year Forum in Washington, D.C. A component of that meeting, Congressional Advocacy Day, provides the opportunity to talk with Congress members about how to protect our patients' vision. Through the Advocacy Ambassador Program, Ophthalmology residents and fellows are sponsored to attend by their state ophthalmology societies, subspecialty societies and training programs and the registration fee is waived by the Academy.

Advocacy ambassadors meet their Congress members on the Hill alongside leaders in ophthalmology, and engage first-hand in being leaders protecting sight. Another important way to engage in advocacy is to be a member of your state ophthalmology society, so that you can stay informed about local issues affecting your patients.



Lindsay Rhodes, MD, greets her former employer U.S. Sen. Harry Reid, D-Nev., during Congressional Advocacy Day. Dr. Rhodes worked in Sen. Reid's office prior to attending medical school.

Take that next step and learn to advocate for your patients. No one has worked as hard as you have to earn the privilege of protecting vision.

Lindsay A. Rhodes, MD, is an assistant professor of ophthalmology at the University of Alabama at Birmingham School of Medicine. Dr. Rhodes is a member of the Academy's YO advocacy subcommittee and the Leadership Development Program XVII, class of 2015.



Brian Chan-Kai, MD, is a vitreoretinal specialist at EyeHealth Northwest in Portland, OR. Dr. Chan-Kai completed his residency at the Cullen Eye Institute, Baylor College of Medicine, where he also served as chief resident. He then trained in vitreoretinal surgery and diseases at the Casey Eye Institute/Oregon Health and Science University.



- OKAPs season begins!
- ASOPRS fellowship interviews
- Residency match

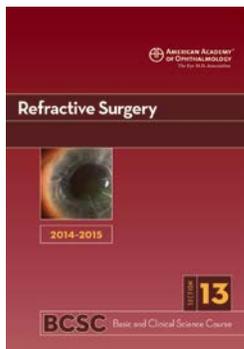
- OKAP examination
- ASOPRS fellowship interviews

- PGY-3 residents (soon to be PGY-4) begin preparation for SF Match fellowship applications (personal statement, CV preparation, identifying letters of support, etc)
- ARVO Annual meeting



TOP RESOURCES FOR WRITTEN BOARDS: (AKA) OKAP EXAM

The Ophthalmic Knowledge Assessment Program (OKAP®) and the written qualifying exam (boards) are 250-item multiple-choice tests administered to ophthalmology residents or residency graduates to measure basic science and clinical knowledge. The OKAP can be considered a resident proxy for the written boards and developing your study habits for this test should help for the written qualifying exam. To help ensure that you perform your best, here are several print and online resources.



1. Basic and Clinical Science Course (BCSC)

Apart from the reading material itself, review the pictures, pathology slides and illustrations throughout all the books in the weeks leading up to the written examination. The questions at the end of each book are also a helpful way to gauge your understanding of the material. Available in print or e-book.

2. OphthoQuestions.com

(Various contributors)
This online question bank offers thousands of quality test questions spanning all subspecialties. Its

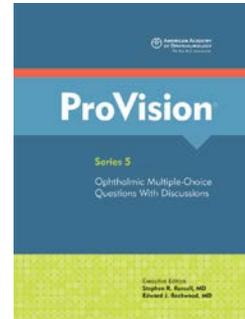
strengths include its ever-growing library, the ability to monitor your performance by subspecialty independently and against your peers and its flexibility. You can utilize a tutor-mode, sit for a full-length mock exam, or anything in between. A number of residency programs have started offering subscriptions for trainees, at least for a portion of the year.



3. The Ophthalmic News and Education (ONE®) Network

The Academy's ONE® Network has a vast wealth of information, including videos, courses and cases. In particular, the self-assessment quizzes, with more than 1,000 questions, can augment your OKAP preparation. There are also more than 200 "Diagnose This" quizzes, which are quick and engaging and provide discussions. The new

residents' area in the ONE Network provides resources which may help you with topics you need to brush up on.

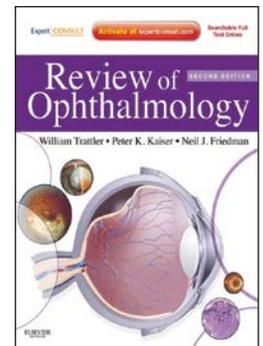


4. ProVision: Preferred Responses in Ophthalmology, Series 5

Brand new set of 550 multiple-choice questions, with thorough discussions of the preferred responses, numerous images and suggested resources for further study. The question-and-answer format is ideal for an interactive activity that quickly identifies strengths or areas for improvement. The content is heavily illustrated and covers all 11 subspecialties, with 50 questions per subspecialty. The interactive e-book version is new this spring.

5. Review of Ophthalmology, William Trattler, MD; Peter K. Kaiser, MD; and Neil Friedman, MD

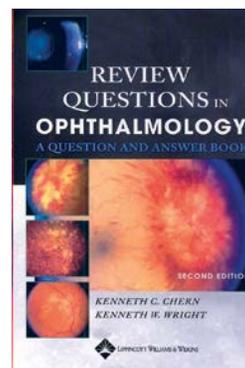
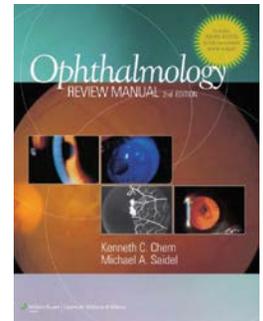
This is an excellent resource to use in preparation for the standardized written exam. It is well organized and packed with information, illustrations and review questions.



6. Ophthalmology Review Manual

Kenneth C. Chern, MD

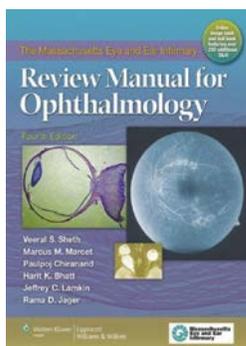
This is another outstanding resource to use during written exam preparation. The information presented may be slightly less detailed than the review book here. Take a peek inside on everyone's favorite online bookstore to see which format you prefer!



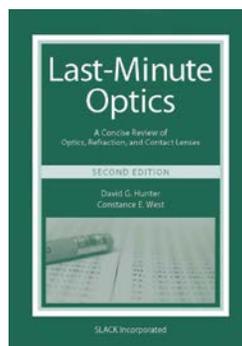
7. Review Questions in Ophthalmology: A Question and Answer Book

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

This question book provides a nice complement to Dr. Chern's review manual above. The questions are not as rigorous overall as those in some of the other books, 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; and Harit K. Bhatt, MD Online reviews suggest this recently released version is vastly different from the former one, which is a great question book in itself. The biggest source of help may be from the many high-quality pictures and photos.



Refraction, and Contact Lenses, David G. Hunter, MD, PhD, and Constance E. West, MD This is a fantastic short book to read and re-read during the last few weeks, especially if you consider optics a potential weakness. It covers the gamut of clinical (e.g., Why is the sky blue? Why does Ms. Goldbags not like her current glasses?) and “mathematical” optics (e.g., prisms,

lenses and mirrors).

9. Last-Minute Optics: A Concise Review of Optics,

James G. Chelnis, MD

GOOD HANDS, COOL HEAD: 5 TIPS TO BECOMING A SURGICAL SUPERSTAR

Executing your first cataract surgery on a real patient as the primary surgeon is a monumental occasion. The ball of nerves in your stomach will start winding weeks in advance. It's what you've been waiting for, striving towards, excited for and yet the weight of “first, do no harm” rests heavily. Follow these tips to fulfill your sacred responsibility to your patient and to become a surgical superstar.

- 1. Pre-op routine.** Sign all the pre-op orders for your upper level. It's not “scut work.” It's preparation for your first case. Listen carefully to their consent talk, including intra and post-operative expectations. Delivering this talk with confidence will reassure your patient.
- 2. Position carefully.** Every detail matters. Wheel the bed into the operating room head first, locking it exactly where the scope can reach the patient's eye. Tape their head with the orbital rims parallel to the ceiling. Drop the foot of the bed several inches to prevent posterior pressure on the globe. The bed height should allow you to sit comfortably in your chair with shoulders dropped (important to prevent shaking), elbows bent and fifth fingers resting gently on the patient's forehead and cheek. This technique prevents complications when the sedated patient randomly moves as your hands will move with them. Avoid numb legs by lowering your chair so you aren't sitting on its edge to reach the pedals. Dial your pupillary distance (PD) into the microscope, ensure each ocular has your prescription, and “zero” or center the scope. While looking through the oculars, bring the scope down to the patient's eye. Stop lowering it as soon as the patient's eye comes into focus. Focusing in too far will give you a headache.
- 3. See one.** Memorize every step when observing your upper level operate. Request a copy of their dictation to learn the names of the steps and instruments. Then dictate for them. Obtain the cataract instrument list and learn the phaco machine



set-up with trouble-shooting tips from your esteemed scrub nurse. Show your nurses respect as they can teach you volumes.

- 4. Do one.** Don't expect to operate immediately. Most upper levels are nervous at the beginning of the year as they are still learning. In the meantime, organize sessions in the wet lab accompanied by an attending or fellow. Their time is precious, so memorize tip 3 before the wet lab. Practice suturing and cataract surgery steps on pig eyes. As your upper levels gain confidence, they will let you do parts of their cases. Draping, placing the lid speculum and making the paracenteses and main wound are small but hugely important steps. Performing these steps prior to your primary cataract surgery lends a fantastic advantage for learning positioning and working under the scope.
- 5. Teach one.** Lastly, remember where you are now when you become an upper level. Honor the gift your upper levels, fellows, and attendings gave you by teaching your first and second years. If you are good to them, they will be good to you. Pay it forward.

Natasha Herz, MD, is a cataract, corneal and refractive surgeon who works as a solo practitioner at Kensington Eye Center in Washington, D.C. She completed her residency and fellowship at the Cullen Eye Institute at Baylor College of Medicine in Houston. Local peers selected her to appear in Washingtonian magazine's Top Doctors of 2014. She also is the vice president-elect of her local medical society and chair of the YO Info editorial board.



RETINOSCOPY 101

Refraction is not an easy skill to learn. It takes patience and a lot of practice. As a beginner, stay away from uncooperative patients (babies and mentally handicapped) and those with significant corneal or lens pathology.

Begin by understanding the components of a glasses prescription (Figure 1.) The first number indicates the spherical power in diopters, signifying the degree of myopia (minus power because a divergent lens is required to neutralize nearsightedness) or hyperopia (plus power because additional convergence is required to neutralize farsightedness). The second and third numbers refer to the astigmatism, if there is any. The second number indicates the power in diopters of the cylinder. Beware that the cylindrical power can be indicated in plus or minus cylinder form; lens transposition can convert one to the other. The third number indicates the axis at which the cylinder is neutralized. If the patient requires a bifocal, the additional spherical power is called the "ADD."

OD: -4.50¹ sph ADD +2.50⁴

OS: -4.50¹ - 1.00² x 180³ ADD +2.50⁴

1. Spherical power in Diopters
(note this is an example of myopia and the right eye has only spherical error without astigmatism)
2. Cylindrical power in Diopters
(note this example is in minus cylinder notation)
3. Axis of cylindrical power
4. Power of additional sphere for near to be added to bifocal

Figure 1. Components of a spectacle prescription.

First, ask the patient to fixate on a distant target or dilate the eyes with a cycloplegic agent in order to relax accommodation. Sit at arm's length from the phoropter. You must take this into account when determining the patient's final spherical error. To calculate how many diopters you need to offset, take the inverse of your working distance in meters. For example, if the working distance between your retinoscope and the phoropter is 50cm, then subtract 1/0.5m or 2.00 diopters from the final spherical correction to account for this.

Starting with the right eye, shine the retinoscopy streak into the patient's eye and move it from side to side. Determine if the light reflex in the patient's pupil moves "with" or "against" motion (Figure 2). Rotate the axis of the streak and look at the reflex in different meridians. If the reflex is of a consistent width and brightness all around, then there is no astigmatism. However, if the reflex looks thicker/thin-

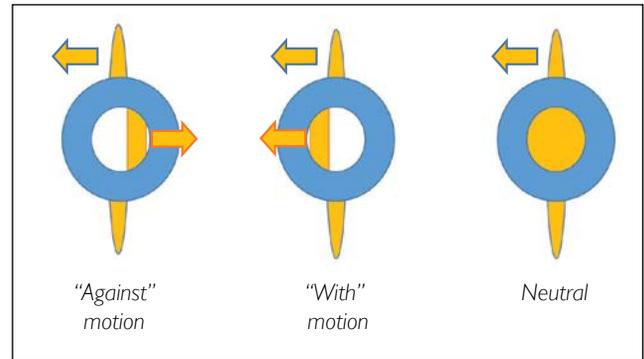


Figure 2. Reflex motions in retinoscopy.

ner or brighter/dimmer when varying the axis of your streak, then there is astigmatism to correct as well.

Assuming the refractive error is spherical only, determine if you need to add plus or minus power. Use the mnemonic "SPAM" to remember that Same ("with" motion) requires Plus power and "Against" motion requires Minus power. Using the spherical power dial on the phoropter (Figure 3), add the appropriate power until you see a bright red reflex without any motion that fills the pupil. You have achieved neutrality.

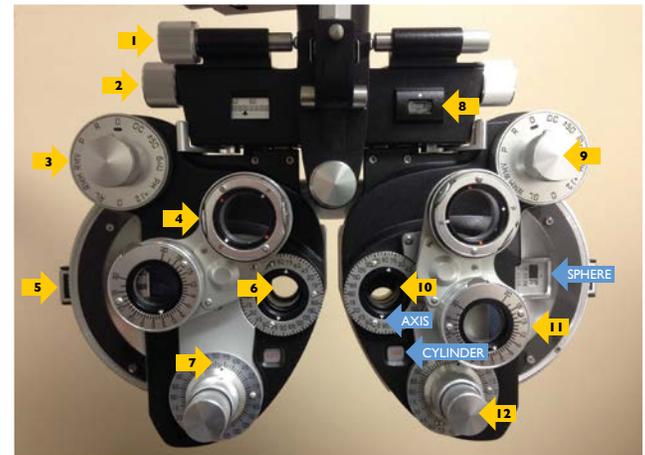


Figure 3. Anatomy of a phoropter.

- | | |
|---------------------------------|-----------------------|
| 1 Tilt adjustment | 7 Cylinder axis |
| 2 Pupillary distance adjustment | 8 Level |
| 3 Strong sphere power | 9 Auxiliary lens dial |
| 4 Jackson cross | 10 Eye piece |
| 5 Weak sphere power | 11 Risley prism |
| 6 Viewing tube | 12 Cylinder power |

What if there is astigmatism? As you move the streak from side to side, the reflex will appear to move obliquely (Figure 4). Rotate the beam until it is parallel with the reflex motion. Neutralize the "with" or "against movement" you see here. The secondary meridian is 90 degrees away and is at the axis of the patient's astigmatism. Neutralize the "with" or "against movement" in this second meridian to find the cylindrical power. Do the exact same procedure

with the left eye. Don't forget to subtract your working distance before writing the prescription. Congratulations, you are finished with retinoscopy!

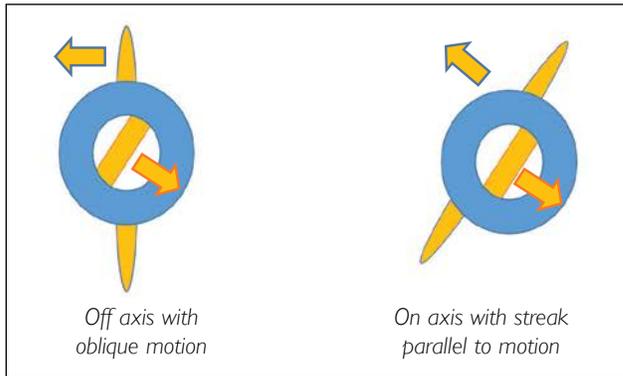


Figure 4. Orientation of streak in astigmatic eye

Video resources:

<https://www.youtube.com/watch?v=EjazGOI-XcU>

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

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

<https://www.youtube.com/watch?v=ZjlyDi7iFgc>

<https://www.youtube.com/watch?v=bUEFgxx-eY8>

Olivia L. Lee, MD, is a specialist in uveitis and cornea/external disease at the Doheny Eye Institute and Assistant Professor of Ophthalmology at UCLA. After completing medical school at Baylor, she completed her residency and uveitis fellowship at the New York Eye and Ear Infirmary as well as a cornea fellowship at Jules Stein Eye Institute. She joined the YO Info editorial board in 2015.



TOP 10 EYE EMERGENCIES

1. Ischemic Optic Neuropathy: rule out Giant-cell arteritis (GCA)



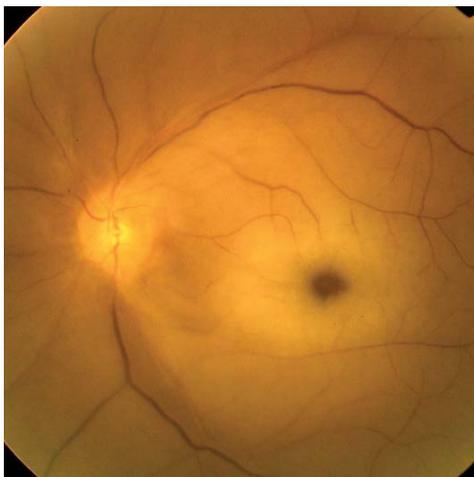
Fundus photo with chalky white pallor of the optic nerve from arteritic anterior ischemic optic neuropathy

3. Mac-on Rhegmatogenous Retinal Detachment



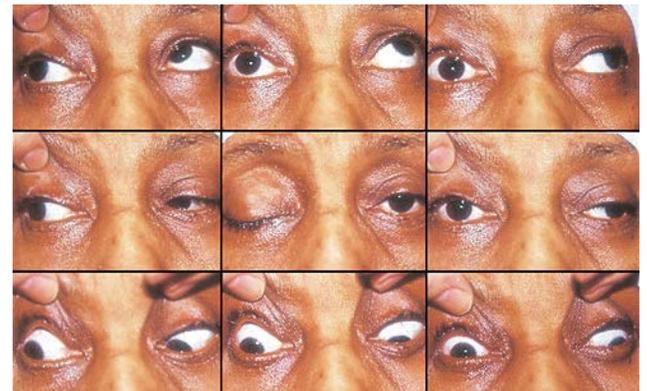
Fundus photo of a superior mac-on retinal detachment

2. Central retina artery occlusion: rule out GCA, causes of emboli/thrombus



Fundus photo with diffuse retinal whitening is seen with a foveal cherry red spot on fundus exam

4. Acute third nerve palsy: rule out intracranial aneurysm



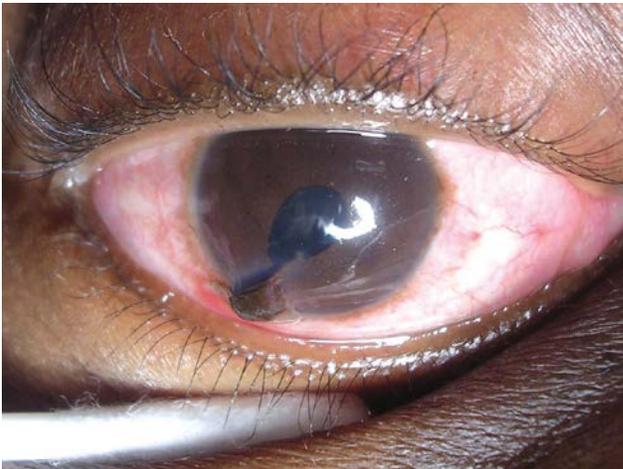
Extraocular motility photos showing complete ptosis, the right eye down and out, inability to adduct, infraduct and supraduct the eye and a dilated pupil.

- 5.** Corneal microbial keratitis: culture and treat with empiric antibiotics and follow closely



Slit-lamp photo showing conjunctival injection and focal white infiltrates with a hypopyon

- 6.** Open globe: rule out intraocular foreign body



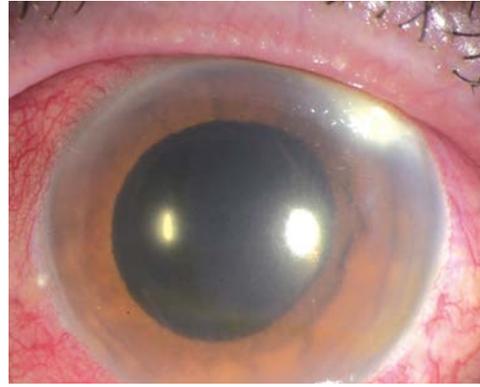
Slit-lamp photo showing a peaked pupil pointing toward an inferotemporal perilimbal corneal perforation with iris prolapse

- 7.** Acute angle closure glaucoma



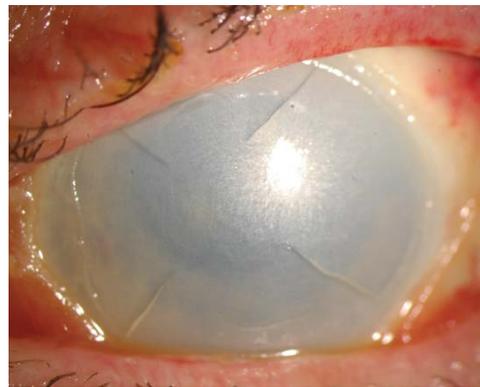
Slit-lamp photo with conjunctival injection, corneal haze with microcystic edema, a fixed, mid-dilated pupil, and a shallow anterior chamber.

- 8.** Endophthalmitis



Slit-lamp photo with conjunctival injection mild corneal edema and haze, and anterior chamber hypopyon

- 9.** Alkali injury: requires urgent and copious irrigation



Slit-lamp photo with perilimbal conjunctival blanching, conjunctival injection, and diffuse corneal haze.

- 10.** Orbital cellulitis



External photo showing lid swelling and erythema with proptosis. CT scan shows signs of orbital inflammation. Other orbital signs, such as pain with eye movements, ophthalmoplegia, optic nerve involvement and fever and leukocytosis, confirm the diagnosis.



Compiled by Purnima S. Patel, MD; James Chelnis, MD, and Edward Hu, MD

Purnima S. Patel, MD, has been in practice at the Atlanta VA Medical Center and the Emory Eye Center in Atlanta since 2010. She specializes in medical retina, uveitis, cataract surgery and resident education. Dr. Patel has served on the YO Committee since 2011, currently serving as chair.



THE 8 POINT EYE EXAM

The key to any examination is to be systematic and always perform each element!

1. Visual acuity

- Describe vision as 20/X where X = the distance in feet a person with 20/20 vision would view the same optotype
- Example 1: A person with 20/50 vision sees at 20 feet what someone with 20/20 vision would see at 50 feet
- Example 2: A person with 20/10 vision sees at 20 feet what someone with 20/20 vision would see at 10 feet
- Vision poorer than 20/400 is typically described in terms of counting fingers at X feet, hand motions, or light perception with or without projection.
- CC: with correction
SC: without correction

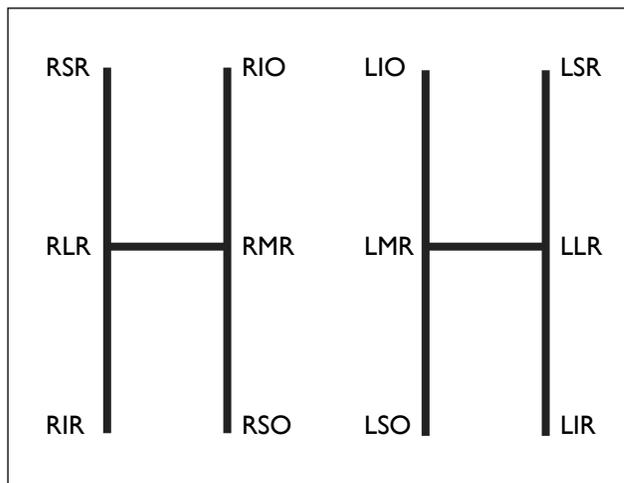
2. Pupils

- Observe pupil size and shape in the dark and light, using an indirect light source.
- Check the reactivity of each pupil separately with a muscle light or penlight, and then perform the swinging-flashlight test to evaluate for an afferent pupillary defect.

Swinging flashlight test: A normal pupillary response will have equal constriction in each eye. A relative afferent pupillary defect is present when the flashlight swings to the opposite eye and the one left in darkness slowly dilates instead of consensually constricting with the other pupil.

3. Extraocular motility and alignment

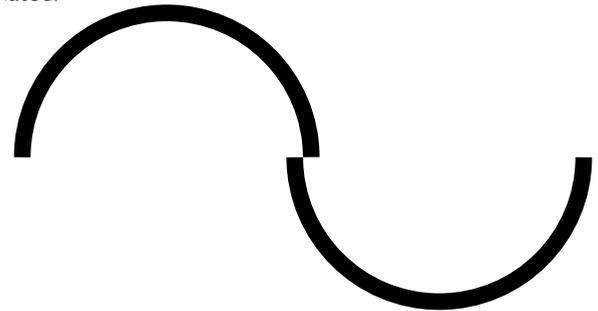
- Check corneal light reflexes to assess alignment. If not centered in pupils, perform cover testing.
- Have the patient follow an object in the six cardinal directions to assess versions (test ductions monocularly).
- Document muscle under action with a minus (–), over action with a plus (+) on a scale of 1 to 4, with 0 being normal motility.



4. Intraocular pressure

Goldman applanation is the gold standard tonometry based on the Imbert-Fick principle where pressure = force/area. At a diameter of 3.06mm, the force of corneal resistance to flattening is balanced by the capillary attraction of the tear film to the tonometer tip.

Be careful! If the mires rings are too wide, the pressure is overestimated; if they're too thin, the pressure is underestimated.



Goldman applanation. Semicircles (viewed through the slit lamp ocular) showing the endpoint, in which the innermost aspects of the two semicircles are touching. Adjust the force applied to the cornea until the endpoint is reached.

5. Confrontation visual fields

Visual field assessment compares the examiner's visual field (presumed normal) to the patient's visual field. By presenting stimuli (fingers, light or objects) equidistant to both examiner and patient, to compare the response of the patient to your own.

6. External examination

- Assess structures like lymph nodes and temporal arteries as indicated by the history.
- Assess lid position by measuring margin-to-reflex distance (MRD) in millimeters from the margin of the upper lid to the light reflex in the center of the cornea.
- Assess skin for any suspicious lesions that may need biopsy.
- Use an exophthalmometer to measure the degree of proptosis in millimeters.
- Test CNII-VIII if patient has sudden onset of diplopia or other neurologic symptoms.
- Check for step-off fractures of orbital rim and crepitus via palpation if history of trauma.

7. Slit-lamp examination

- Lids/lashes/lacrimal system: Is the anatomy of the lid margin normal?
Are there any lesions?

ABOUT YO INFO RESIDENT EDITION

Now in its fourth year, this special print version of *YO Info* features a host of advice just for residents, developed by members of the American Academy of Ophthalmology's young ophthalmologist ("YO") committee and subcommittees. From ophthalmic abbreviations to common eye emergencies, we've got you covered.

- Visit aao.org/young-ophthalmologists for even more advice – from coding tips to contract negotiation and ways to grow in leadership.
- Visit aao.org/residents for videos and other resources just for residents.

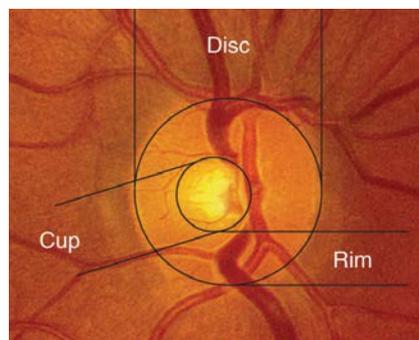
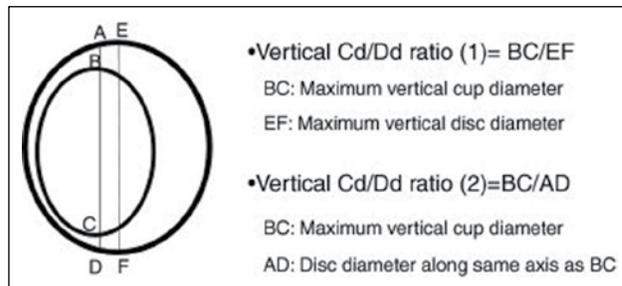
YO Info is part of the Academy's long-term strategy to engage young ophthalmologists and guide them through the many stages of professional life. Learn more about how the Academy can help you succeed in ophthalmology at aao.org/young-ophthalmologists.

THE 8 POINT EYE EXAM

- Conjunctiva/sclera: Is it white and quiet? Is there injection? Are there any lesions?
- Cornea: Is it clear? Are all five layers normal in appearance?
- Anterior chamber: Is it deep? Is it quiet? Are there cells or flare?
- Iris: Is it round? Are there any lesions?
- Lens: Is it clear?

8. Fundoscopy

- Perform slit-lamp biomicroscopy to evaluate the optic nerve, macula and vessels.
- Make note of the cup-to-disc ratio, asymmetry between the optic nerves and any focal



- Use an indirect ophthalmoscope to assess the retina periphery for tears/defects.
- Use the slit lamp to visualize the anterior vitreous and identify heme and pigmented or white cells.
- Draw any fundus pathology accurately and the size document in units such as disc diameters or disc areas.

Edward H. Hu, MD, PhD, is a refractive cataract surgeon with Illinois Eye Center in Peoria, Ill. This is his fourth private practice environment, which is as close to a perfect practice as there is. After a bachelor's degree in molecular biology from MIT, he got a PhD and MD from the New York School of Medicine. He completed residency at the University of Iowa Hospitals and Clinics.



The Young Ophthalmologist's
Newsletter

Editor-in-Chief

David W. Parke II, MD

Chief Medical Editor

Natasha L. Herz, MD

Assistant Editor

Neeshah Azam

2015 YO Info Editorial Board

Natasha L. Herz, MD, Chair
Brian T. Chan-Kai, MD
James G. Chelnis, MD
Edward H. Hu, MD, PhD
Olivia L. Lee, MD
D. Wilkin Parke, III, MD
David E. Vollman, MD, MBA

YO Committee Chair

Purnima S. Patel, MD

Secretary for Member Services

Tamara R. Fountain, MD

AAO Staff

Neeshah Azam
Gail Schmidt

Design

Lourdes Nadon

Website

[www.aao.org/
young-ophthalmologists](http://www.aao.org/young-ophthalmologists)

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

