Opponent Testimony - S.B. 129
Aleksandra Rachitskaya, MD - Ohio Ophthalmological Society
Senate Health Committee
June 12, 2024

Chairman Huffman, Vice-Chair Johnson, Ranking Member Antonio and members of the Senate Health Committee, my name is Aleksandra Rachitskaya. I am an ophthalmologist practicing in Cleveland, Ohio. I am here today representing the views of the Ohio Ophthalmological Society in my capacity as its current President.

Let me start by briefly outlining my background and experience in ophthalmology. After graduating college, I attended medical school for 4 years and did a year of lab research at the National Eye Institute at the National Institutes of Health. Subsequently I did my medicine internship year followed by three years of ophthalmology residency and two years of sub-specialty training in medical retina and vitreoretinal surgery. I have been in practice almost 10 years and throughout this time have taught multiple ophthalmology residents and fellows. What I have learned and what I teach is that we deal with the most important sense a person has, the sense of vision. With visual loss, the resultant quality of life is equivalent to that of someone with severe ulcerative colitis, severe angina, or stroke. (Brown MM, Brown GC, Sharma S, Busbee B. Quality of life associated with visual loss: a time tradeoff utility analysis comparison with medical health states. Ophthalmology. 2003 Jun 1;110(6):1076-81.)

Today, we would specifically like to address the surgical related procedures listed in Section 4725.012 (A) (1) through (6). I will cover the laser procedures outlined in section 6 and Dr. Cahill will cover those listed in section 1 through 5.

Before detailing the specifics of these procedures it is important to note a few issues related to the language as proposed:

- The current language in the bill would make Ohio one of the most expansive surgical states for optometry in the country - only eight others allow as extensive privileges and the majority of these states have populations much smaller than Ohio. Just this year optometry has tried to advance surgical expansion bills in 14 different states, only one, South Dakota, has passed legislation and it did not include all the procedures included in SB 129. In nine of the states the proposed legislation did not pass and their sessions are over and the remaining few are still pending.
- The Veterans Administration has made it clear in recent communications that it does not currently permit these procedures to be done in its facilities regardless of the state where an optometrist has his or her license.
- In proponent testimony it was indicated that there have been no adverse outcomes related to surgical procedures done by optometrists in states that have granted privileges – in Attachment A we have included detailed examples of adverse outcomes that have occurred in Oklahoma and Kentucky related to optometrists doing these procedures and will describe some of these issues in our testimony.

When we think about the surgical laser procedures proposed in SB 129, in my experience, there are three things that are essential: appropriate decision making, procedure choice and execution, and ability to recognize and manage the complications. You cannot take care of the patient without having mastery of all three aspects.

YAG Capsulotomy
YAG laser capsulotomy is used to make an opening in the cloudy capsule behind an implant that is placed in the eye during cataract surgery. It allows light to pass through better. It is sometimes needed after cataract surgery to remove this cloudy layer or scar tissue that develops after the surgery and can cause decrease in visual acuity or visual function or both.

However, not every patient is a good candidate for this surgery even if they have evidence of cloudiness or membrane formation behind their intraocular implant. For instance, if the patient has retinal swelling, the procedure could make it significantly worse and affect the central vision. Identification of retinal swelling requires a retinal exam prior to laser during which the eyes are dilated and the ophthalmologist uses special optical coherence tomography imaging. Inappropriate use of the YAG can result in worsening of retinal swelling which then could require not only drops, but also injections into the eye to treat.

As a retina specialist I routinely get referrals from my anterior segment colleagues to see the patients before their YAG. These patients require a comprehensive retinal exam to look for disease in the periphery of the eye. Occasionally, they require a depressed scleral exam, where we press on the eye to see the peripheral retina. This is essential in selection of appropriate patients for the YAG capsulotomy as there is 3.9-fold increase in the risk of retinal break or detachment among those who undergo capsulotomy. (Javitt JC, Tielsch JM, Canner JK, Kolb MM, Sommer A, Steinberg EP, Bergner M, Anderson GF, Bass EB, Canner J, Gittelsohn AM. National Outcomes of Cataract Extraction: Increased risk of retinal complications associated with Nd.-YAG laser capsulotomy. Ophthalmology. 1992 Oct 1;99(10):1487-98.)

So as these examples show, patient safety and outcomes aren't just about learning the technique to perform the YAG - knowing everything related to that patient and the associated risks is essential. A poorly selected patient can lead to multiple surgeries such as extensive retinal detachment repairs and irreversible vision loss.

Laser Peripheral Iridotomy (LPI)
Laser Peripheral Iridotomy is a surgical procedure where a laser creates a tiny opening or hole in the iris (the colored part of the eye) to help create the pathway for the fluid to move in the eye and reduce pressure to treat particular types of glaucoma.

I still vividly recall a patient who presented with symptoms consistent with angle closure glaucoma, a common indication for this laser surgery. However, the careful attention to and review of her medical history and medications, showed that she was treated for migraines with a medication called topiramate or Topomax. Recalling research done by my ophthalmology colleagues that showed that this medication can cause anatomic changes in the eye that appear to look like angle closure, but are not, led to a different course of treatment. (Grewal DS, Goldstein DA, Khatana AK, Tanna AP. Bilateral angle closure following use of a weight loss combination agent containing topiramate. Journal of Glaucoma. 2015 Jun 1;24(5):e132-6)

Special ophthalmology imaging called anterior segment optical coherence tomography and anterior segment ultrasound confirmed our suspicion. We were able to stop the medication and use other medications to help the patient. Having extensive medical knowledge allowed us to avoid an unnecessary and invasive laser surgery and associated risks. The extensive training that I have received as an ophthalmologist is essential not just for performing the procedure it provides the experience for me and my colleagues to decide on who needs and, more importantly,

who does not need the laser surgeries. It also allows ophthalmologists to anticipate, avoid and manage potential complications.

Selective Laser Trabeculoplasty (SLT)
Selective Laser Trabeculoplasty or SLT, is a surgical procedure using laser energy to target the trabecular meshwork, the part of the eye that drains fluid that the eye makes. By doing so it decreases intraocular, inside the eye, pressure by increasing aqueous outflow. It is supposed to lower the intraocular pressure and prevent vision loss from glaucoma. However, occasionally after using the SLT laser the opposite can happen. Acute increase in intra-ocular pressure can occur following SLT especially in heavily pigmented eyes. (Harasymowycz PJ, Papamatheakis DG, Latina M, De Leon M, Lesk MR, Damji KF. Selective laser trabeculoplasty (SLT) complicated by intraocular pressure elevation in eyes with heavily pigmented trabecular meshworks. American journal of ophthalmology. 2005 Jun 1;139(6):1110-3) In fact, the increase can be so significant that patients might require urgent scalpel glaucoma surgery. Having the ability to recognize this and be ready to provide additional appropriate treatments as indicated to prevent vision loss is critical.

These are just a few examples of why appropriate decision making, procedure choice and execution, and ability to recognize and manage the complications are essential to providing the best possible patient care. We believe that as ophthalmologists the training and education we received in medical school, residency and often fellowship allows us to think beyond just the procedure and consider the whole person with medical co-morbidities and medications and the whole eye including other structures than those targeted by these laser surgeries including the retina and the optic nerve. The patient's vision is too important to settle for anything less.

Now, with the permission of Chairman Huffman I will turn the testimony over to Dr. Cahill briefly and then conclude my comments with some information regarding education and training differences after he has finished with his testimony.

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As we referenced in describing the indications for procedures, the procedures themselves, and potential complications we believe the rigor and breadth of an ophthalmologists training is essential for the best possible patient care. We wanted to briefly provide a high level overview of that journey and have included a more detailed breakdown in Attachment B.

An ophthalmologist's education and training to practicing independently is a 12 to 14 year journey including 4 years of undergraduate education, 4 years of medical school, 1 year internship, three years of residency in ophthalmology and in most cases a 1-2 year fellowship focusing on a specific sub-specialty of the eye. Then after this formal training, in addition to continuing educational (CME) requirements the majority of ophthalmologists are board certified, a standard national process that must be renewed every ten years.

It is important to note that at the end of medical school the student becomes a doctor but CANNOT obtain an independent license to practice medicine in the State of Ohio. Ohio recognizes the need of an internship and residency to obtain additional experience in the supervised care of actual patients prior to being given the privilege of treating patients independently.

Almost all physicians will continue to function as trainees throughout an additional 4 to 6 years of residency and fellowship before ever practicing independently. The key to this training is the focus on building of the knowledge base obtained in medical school through the supervised treatment

of actual patients. There is no substitute for this experience. It must occur with sufficient quantity of exposure, there must be consistent constructive mentoring, and the resident must be able to evaluate the results of their treatment over time. The resident to faculty ratio in ophthalmology departments exceeds 1:1. All of this training is vital to being a competent and confident surgeon. The rigor and developments of this training isn't simply measured by how many times a specific procedure is required to be done by national accrediting bodies.

In short, based upon what I have outlined above, ophthalmologists have more than 144 weeks of training that relates to their ability to do laser surgery before they can practice completely independently versus less than one week for an optometrist as is proposed in SB 129. Being trained as a surgeon requires not just being proficient and understanding one part of the body or one surgical technique but rather everything about that patient, everything that could go wrong, how to fix it and what not to do. It can't be duplicated by focusing on a particular procedure in a training course, classroom instruction and practice on eye models. In ophthalmology training we treat patients, not eye models.

Now with Chairman Huffman's permission I will turn over the remaining part of our testimony to Monica Hueckel.

Attachment A

Kentucky Academy of Eye Physicians and Surgeons

June 3, 2024

The Honorable Stephen A. Huffman
Chairman, Senate Health Committee
Senate Building
1 Capitol Square
Ground Floor 040
Columbus, Ohio 43215

Dear Chairman Huffman and Members of the Committee:

We understand that your committee is considering Senate Bill 129 in the Ohio Legislature. We are writing to inform you about a similar bill that was regretfully enacted in our state in 2011, which was misleadingly titled *Access to Quality Eye Care* (Kentucky Senate Bill 110). Similar to Ohio's SB 129, the bill in Kentucky allowed optometrists—who are not medical doctors or trained surgeons—to perform a wide range of surgery on and around the eyes using lasers and scalpels. Since its enactment, the law has in no measurable way expanded access to quality eye care as it was sold to our lawmakers at the time.

You may be hearing from proponents of SB 129 who claim there have been "no complaints" or "no adverse outcomes" from optometrists performing the surgeries authorized as part their scope of practice expansion in some other states. Unfortunately, for a number of patients across the Commonwealth of Kentucky, those claims are simply not true. The following cases are just the tip of the iceberg after consulting with only a few ophthalmologists, and many more exist:

- Eastern KY: While performing a needle injection of anesthesia into an eyelid, a Kentucky optometrist and "teacher of optometry surgery" accidentally went through the eyelid and directly into the eye. This is a grave complication, yielding endophthalmitis (blinding eye infection) a retinal detachment, or toxic issue from the drug in the needle.
- Central KY: In an adult patient who had pediatric cataract surgery and was stable for decades, an optometrist lasered the vital capsule that was separating the two chambers of the eye, causing a severe glaucoma with eye pressures three times what is normal, resulting in permanent harm to the optic nerve. Fixing this tragedy took two operations by ophthalmologists (medical doctors and trained eye surgeons).
- Eastern KY: While attempting to perform a YAG capsule surgery, another "teacher of optometric surgery" subjected a patient to a multi-hour procedure. This procedure takes a seasoned ophthalmologist about 5 minutes. These struggles yield multiple laser injuries to the lens of the eye and corneal abrasions.
- Eastern KY: While attempting to remove a "benign" eyelid lesion, a "professor of optometry surgery" used another provider's loupe magnifiers and proceeded to use the dull edge of a #11 scalpel.
- Central KY: A patient who saw an optometrist for a peripheral iridotomy on one eye was subjected to having the procedure done multiple times, over multiple visits. For her second eye, the patient begged the practice to have an ophthalmologist perform the surgery so it would be performed correctly the first time.
- Central KY: An optometrist performed a laser peripheral iridotomy (PI) on a patient with neovascular glaucoma, when laser PI isn't indicated at all! This delayed a patient's care causing further glaucoma damage.

These surgical complications are in addition to numerous misdiagnoses, inappropriate therapy and overlooked problems by Kentucky Optometrists that many of our members have personally treated. There are multiple cases of missed corneal infections, inappropriately treated corneal ulcers, and missed glaucoma that were never reported because there is no medical board oversight or supervision of optometrists in Kentucky, and optometrists here are not required to report adverse outcomes or complications to their licensing board. The absence of a malpractice lawsuit or a recorded complaint filed with the board of optometry does not equate to the absence of harm to the patient.

Kentucky Academy of Eye Physicians and Surgeons

As was the case in Kentucky, you are also probably hearing that SB 129 will expand "rural access" for patients requiring surgical eye care. While there was already sufficient coverage of ophthalmologists statewide prior to the bill introduction in Kentucky, its enactment over a decade ago has not expanded rural access to these procedures in any statistically significant manner. After a thorough analysis of Medicare claims data, peer-reviewed research has shown that despite expansion of laser privileges to Kentucky optometrists, ophthalmologists continue (as they had prior to 2011) to serve an overwhelmingly higher percentage of the population for these procedures. This conclusion comes as no surprise considering there are only about 33 optometrists statewide performing these procedures, and most of them are in our populous urban cities like Louisville and Lexington.

You may also be told by supporters of SB 129 that malpractice insurance premiums have remained flat for optometry since being allowed to perform surgery. This is in no way indicative of whether these procedures are safe for them to perform. The stability of optometric malpractice rates is proportional in nature. The majority of optometrists in the United States do not perform laser and incisional surgery. A statistically miniscule number of individuals performing these procedures on and around the eye will yield a very small number of opportunities for malpractice as compared to the rest of the entire profession. Therefore, this will have a minimal impact on insurance rates—for now. This does not mean that the procedures are safe for optometrists to perform, but rather there are statistically so few of them doing these procedures which in turn, does not expand access to any significant degree. Allowing providers with substandard training to perform surgery on and around the eye is not in any way an increase in "access" to safe quality surgical eye care for rural America.

There is nothing "simple" or "minor" about eye surgery and that is why an ophthalmology resident-in-training spends three years diagnosing, treating, and operating on live patients with real conditions under direct one-on-one supervision of an attending ophthalmologist after completing medical school. Regardless of what proponents of SB 129 may imply, there are frequent complications when it comes to surgery, and it takes the proper level of medical education and training to immediately handle those complications as they arise.

For example, a critical rescue procedure for managing an eyelid bleeding complication simply cannot be experienced in an optometry school, especially given that 23 out of the 24 U.S. schools of optometry are located in states where optometrists are legally prohibited from performing incisional surgery with a scalpel. Furthermore, 22 of the 24 schools are in states where optometrists are prohibited from performing laser surgery. This translates to 95% of optometry students attending schools where optometrists are prohibited from performing laser surgery on live patients. One cannot possibly learn how to become an eye surgeon and manage surgical complications with such an inadequate training curriculum. That's why medical school, internship, and surgical residency exist and are vitally important components of surgical eye care.

In the interests of patient safety, we do not want to see the state of Ohio make the same mistakes as the Commonwealth of Kentucky—mistakes which have led to increased costs for patients, threats to their vision, and no meaningful increase in "rural access" to surgical eye care. We ask that you give our comments full consideration, and that you vote "no" on SB 129.

Sincerely,

John Franklin, M.D.
President

Ryan Smith, M.D.
President-Elect

Ben Proctor, M.D.
Secretary/Treasurer

Ben Mackey, M.D.
Immediate Past President

P.O. Box 920 · Pewee Valley, KY 40056 · Tel: 859-300-2213

Oklahoma Academy of Ophthalmology
www.oklahomaeyes.org
O: 573-635-2173

June 3, 2024

The Honorable Stephen A. Huffman
Chairman, Senate Health Committee
Senate Building
1 Capitol Square
Ground Floor 040
Columbus, Ohio 43215

Dear Chairman Huffman and Members of the Committee:

We are urging Ohio's lawmakers not to enact legislation that was unfortunately adopted in our state of Oklahoma. Specifically, we are writing to ask that you oppose SB 129, which would allow optometrists—who are not medical doctors or trained surgeons—to perform eye and eyelid surgery on the citizens of Ohio.

As the leading organization representing Oklahoma's ophthalmologists—medical doctors specifically trained in eye surgery and comprehensive medical eye care—we have all too often heard those in the optometry profession claim to lawmakers in other states that there have been "great experiences and no complications" with regards to surgery being performed by optometrists in our state and that there have been "no complaints" made to the state's board of optometry. To hear these assertions is alarming to us, as many of our members have had to treat far too many complications or mistreated patients by optometrists attempting to perform some of the same surgeries (which often turned out to be the incorrect treatment for the patient's conditions) authorized in SB 129.

We would like to share just a handful of professional observations and concerns based on a few sample patients, which demonstrate that a mere weekend worth of "additional training" (32 hours)—which is all that would be required for optometrists to perform the surgeries outlined in SB 129—is grossly inadequate as a pathway to become properly trained to perform eye surgery. Allowing optometrists to perform surgical procedures in Oklahoma has ***not*** increased access and has indeed caused patient confusion and complications. The patient summaries below are various examples:

- **Patient #1:** A patient who—after months of evaluation for a painful red eye by not one, but TWO different optometrists—was (finally) sent to the emergency room for pain relief. The medical doctor on staff at the emergency room (not the optometrists) diagnosed chronic angle closure glaucoma and referred the patient to an ophthalmologist. A peripheral iridotomy (which optometrists would be authorized to perform in SB 129) would have been an appropriate early treatment, but due to delay in diagnosis and scar formation from lack of a proper diagnosis the patient required a much more invasive glaucoma filtering surgery. The two optometrists that repeatedly saw the patient (and failed to properly diagnose or refer to an ophthalmologist) were "laser certified" by the Oklahoma Board of Examiners in Optometry (the same certification requirements that Ohio optometrists would need to meet in SB 129). The patient filed a lawsuit against the optometrists, but died shortly thereafter. While the cause of death was not necessarily due to his ocular issues, it technically ended any litigation against the optometrists.

- **Patient #2:** This patient was a woman with symptoms of visual distortion in one eye. Her optometrist performed a laser iridotomy (which would be authorized for optometrists to perform under Ohio's SB 129). In this surgery, a laser is used to burn a small opening in the iris so that fluid can flow through the hole and move forward, thereby deepening the front chamber of the eye. The objective of performing this procedure is to decrease the pressure in the eye if the drainage system angle is narrow or blocked. In this example, the optometrist performed this surgery in both eyes of the patient. The patient continued to experience visual distortion and sought a second opinion from an ophthalmologist.

    - Records from the optometrist were obtained and reviewed. There was no documentation of history or examination findings to warrant the laser surgeries. There was however, documentation that insurance would pay for the laser surgeries. Only after visiting an ophthalmologist, was the patient that properly diagnosed the cause of her symptoms of distorted vision—a wrinkle in the retina**. The patient did not need the laser surgeries that the optometrist performed, and the insurance company paid for unneeded an unnecessary surgery.** Net result - patient risk without any chance of benefit, and increased health care costs, not to mention failing to diagnose and treat the patient's actual problem. **Exactly the opposite of the goal of medical care which is patient benefit and the lowest risk with reasonable cost.**

- **Patient #3:** Another patient presented emergently to the hospital after an optometrist attempted to perform a laser iridotomy and encountered hemorrhaging at the surgical site. The optometrist could not proceed with the surgery and left the laser opening incomplete. The optometrist then moved to the second eye and tried to perform a laser iridotomy and once again encountered hemorrhaging and could not complete the procedure. The bleeding in both eyes resulted in very elevated eye pressures, which then became an emergency. An ophthalmologist, a medical doctor and surgeon, came to the aid of the patient, addressing the complication.

    - There is no doubt that performing these procedures requires the proper level of medical education, clinical surgical experience and the judgment that comes with years of medical and surgical training to learn not to put patients' vision at risk. A significant part of an ophthalmologist's training consists of performing complete surgical cases on live patients under the direct supervision of an attending surgeon over a period of three years. This cannot be obtained in the optometry school 32-hour training course.

    - Even with ophthalmology's medical and surgical residency training that is established and proven to be necessary to perform eye surgery proficiently and safely, complications may still occur. If one decreases the education and experience legally required to perform these procedures, there is no doubt there will be *increased* complications. In the case of Patient #2, he realized that he had to go to another doctor who could take care of his problem and he went to the hospital. It later was identified that the patient was on anticoagulants. The patient said he had told the optometrist about his anti-coagulant use, but the optometrist said it would not be a problem. However, to anyone properly trained, it ***should not*** have been surprising for the patient to hemorrhage. The patient was hospitalized and managed by ophthalmologists at the hospital. **Ultimately it was determined that the patient did not even need the laser treatment that the optometrist performed.** From the weekend laser course (which is all the "additional training" required for optometrists in Oklahoma to legally perform the procedure, as it would be in Ohio), **the optometrist clearly did not understand if the laser treatment**

was needed, and did not recognize the significant risks for this patient. The patient suffered damage to both eyes and there were high additional costs that were entirely unnecessary. Poor quality of patient care with increased costs is not what patients in Oklahoma or Ohio deserve.

- **Patient #4**: A patient was supposed to receive a YAG capsulotomy (which would be authorized in SB 129) from an optometrist. However, the optometrist could not adequately visualize the posterior capsule with the slit lamp (a microscope with a bright light used during an eye exam to provide a closer look at the different structures at the front of the eye and inside the eye.) Therefore, a special lens was utilized for improved visualization of and laser administration to the posterior capsule (a thin membrane that forms a physical barrier between the anterior and posterior segments of the eye). **Unfortunately for the patient, the optometrist selected the wrong lens, so the laser was focused on the retina instead of the posterior capsule. A focused YAG laser treatment was administered by the optometrist to the macula (in the back of the eye) resulting in immediate damage with resultant scarring of the retina and permanent blindness in that eye.**

- **Patient # 5:** A patient diagnosed with acute angle closure by an optometrist was referred to an ophthalmologist for laser iridotomy (a surgery authorized in HB 10099), **but only because the optometrist did not have access to a laser at that time.** However, when the patient was examined by the ophthalmologist, the patient did NOT have acute angle closure, but rather had neovascular glaucoma. Not only was a laser iridotomy NOT the correct procedure to perform on this patient, but it would have been extremely harmful if one had been done in the setting of neovascularization of the iris which would have resulted in hemorrhaging in the eye, and worsening of the eye pressure with NO alleviation of the underlying disorder. The patient's condition would have been made worse if this optometrist's diagnosis and treatment plan were followed. If skilled slit lamp exam was utilized instead (which should have been done with this patient, but was not), this would have been diagnosed properly in the first place.

The fact is complications and mistakes indeed happen during some laser eye surgeries. To claim zero complications amongst optometrists or any practicing health practitioner should raise significant questions on: data collection methodology, the practitioners' ability to recognize an adverse event, the practitioners' ability to perform the necessary patient follow up to check for adverse events after surgery, or simply refusal to self-report any complications. Any of which on their own or in combination should raise tremendous concern about professional standards and capabilities.

The five aforementioned patient cases are just the tip of the iceberg. **The truth is that Oklahoma's Board of Examiners in Optometry <u>does NOT</u> collect data on surgery outcomes, and as such, Oklahoma optometrists have no reason to self-report complications and adverse outcomes from their surgeries.**

Our member-ophthalmologists in Oklahoma have also had certain situations where patients came in and said that while getting new glasses, the optometrist saw a "minor lump or bump" on the eyelid and told them they needed to have it removed. The optometrists wanted to surgically excise the eyelid lesion. Fortunately, the patients did not consent to this. What turned out to be a "minor lump or bump" turned out to be small cysts that did not need to be surgically removed.

The five patient cases highlighted above demonstrate the significant negative impact on the safety and quality of care—*with increased costs*—when a state legislature enacts a bill that decreases the educational and clinical training standards to perform eye surgery.

As a professor of ophthalmology who teaches residents to perform surgery, it is an extended process over the course of three years (but only after they complete medical school) to educate future ophthalmologists on:

- How to medically diagnose;
- How to know what the management should be *if* surgical intervention is even the appropriate option;
- Which procedure is the best treatment for that patient's specific conditions;
- Recognize potential risks of the procedure, and;
- How to immediately handle any surgical complications that arise during or after the procedure.

None of this experience can be gained in optometry school or in any 32-hour weekend course.

In Oklahoma, scope of practice expansion for optometry to include surgery has *not* resulted in increased access, but it has *increased patient risk with higher cost of care* due to lowering of the educational and training standards. For the sake of maintaining patient safety and the quality of surgical eye care, while controlling costs, I urge you and your colleagues to protect the citizens of Ohio by rejecting SB 129.

Sincerely,

Ben J. Harvey, M.D.
President, Oklahoma Academy of Ophthalmology
Clinical Associate Professor of Ophthalmology
Dean McGee Eye Institute
University of Oklahoma College of Medicine

Attachment B

Becoming an ophthalmologist – the 12-14 year journey

Undergraduate

The first step to becoming an ophthalmologist is completion of a rigorous undergraduate program with emphasis on biology, chemistry, and physics but also the importance of developing the entire individual with recommended electives in social sciences and ethics.

Medical School

The next step, of course, is the application and acceptance into medical school which has become highly competitive and selective. The third and fourth years of medical school training comprise a progressive experience involving the evaluation, diagnosis and treatment of actual patients under the supervision of interns, residents, fellows, and attendings. The third year includes rotations in surgery, internal medicine, pediatrics, ambulatory care, family medicine, OBGYN, psychiatry, and neurology. The fourth year includes rotations in emergency medicine, ambulatory care, and a subinternship as well as directed electives. The 3rd and 4th years build on the didactic base of the first 2 years giving the beginnings of the crucial mentored hands on evaluation and treatment of patients.

Internship

Following medical school a one-year transitional (rotating) internship is completed. In most cases the intern is the primary care giver for the hospitalized patient. The intern rotates through general medicine and surgery as well as specialties including cardiology, nephrology, gastroenterology, infections disease, endocrinology and neurology. The intern is supervised by senior residents.

Ophthalmology Residency

After completing a one-year internship after medical school, the student completes a three-year residency in ophthalmology. Ophthalmology residency slots are incredibly competitive across the entire country. The successful candidate is typically in the top 10% of their medical school class. The ophthalmology residency at consists of **thousands of primary patient care encounters**. The resident has progressively greater responsibility in the evaluation and management of patients with ophthalmic problems. This includes **both medical and surgical management of thousands of ophthalmic problems** including the entire spectrum of ophthalmic disease and severity level.

Fellowship

Following residency, an increasing number of residents, currently about two-thirds, choose to further their education by one to three additional years of focused training in fellowship. These areas include cornea, retina, glaucoma, oculoplastics, neuroophthalmology, pediatric ophthalmology and pathology – all that include an extensive surgical component. The number of residents participating in these programs and the length of these programs has been growing over time.