CANADIAN ASSOCIATION OF OPTOMETRY STUDENTS
ASSOCIATION CANADIENNE DES ÉTUDIANTS EN OPTOMÉTRIE

APERTURE

MAGAZINE

THE INAUGURAL issue

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Thank you for taking the time to read the inaugural issue of Aperture! Aperture would not be here today without our dedicated members. Your continued support is what allows CAOS to continue to grow and reach out to you through different mediums.

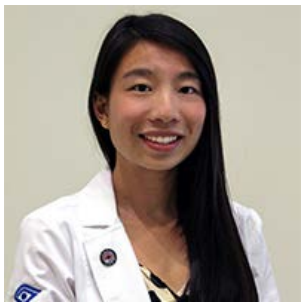
Special thanks to Jonathan Niavis for organizing the magazine article contest and Ashley McMath for coming up with the magazine's brilliant name.

The first issue of Aperture focuses on YOU. Tips, words of encouragement and fun reads. I am extremely pleased to share many well-written pieces throughout the magazine contributed by talented students. You'll even find advice from an expert on client communications in the world of optometry!

As this is my last term serving for CAOS, I am thrilled to end it with the opportunity to bring this magazine to life. I would like to dedicate this issue to Abraham Yuen and Jeffrey Lam as they have made great sacrifices to advance and better CAOS to benefit others.

I would love to hear your thoughts, whether it be positive or negative! Feel free to shoot me an e-mail at vpcomm@caostudents.ca and I'll be sure to respond back.

Happy reading!



Naomi Kong

VP COMMUNICATIONS

PRESIDENT'S

Dear CAOS members,

On behalf of the Canadian Association of Optometry Students (CAOS), I would like to welcome you to our inaugural issue of the CAOS magazine. Aperture provides Canadian optometry students, studying in Canada and USA, an opportunity to share their remarkable experiences, knowledge, and creativity. Readers will enjoy a wide range of articles that will trigger their interest, and empower them to become more involved and interested in optometry.

CAOS is a North American wide organization that represents Canadian optometry students studying both in Canada and the USA. Our mission is to enhance the professional and clinical development of the next generation of ODs, and create awareness of challenges affecting the optometric profession. Also, we want to increase the public's awareness of optometrist's role as the primary vision care provider.

2016 has been a remarkable year for CAOS. We celebrated 25 years of representing Canadian optometry students in advocacy, while implementing several successful programs and events to assist student members transition into becoming the best Doctors of Optometry. Some of the many highlights achieved this year were the CAOS Backpack Launch, CAOS Professional and Clinical Development Lecture Series, CAOS Mentorship Series, Interview Day, Summer Internship Program, iCare EyeCare, and Dinning in the Dark.

CAOS partnered with Eye Recommend to provide backpacks to every CAOS member of the 2019 class. Similar to Canadian medical and pharmacy students, this annual program will provide high quality backpacks to the incoming optometry class every year. The Professional and Clinical Development team planned more than 15 lectures and workshops, which featured the leading speakers in the eye-care industry coming to Waterloo to share their experience and knowledge to CAOS members. The Mentorship team organized successful mentorship events in where more than 150 CAOS members had opportunities to visit successful private practices and network with mentoring doctors. Furthermore, the annual Interview Day was a success in where 40 graduates were able to interview with employers, and secure jobs across Canada.

MESSAGE

The Summer Internship program enabled several optometry students secure summer job placements across Canada. In addition, the iCare Eyecare program enabled optometry students to go into the community and participate in community outreach activities such as educating the public on vision care and optometry's role as the primary vision care provider. The CAOS executive team is actively working to unite all of the CAOS chapters across North America. Not only is CAOS committed to its contributing members, but CAOS supports organizations such as Optometry Giving Sight. This year over $6000 was donated on behalf of CAOS through its annual Dining in the Dark event. Most of the above programs have been launched at the University of Waterloo chapter. We hope to reproduce the same success in other chapters.

I would like to thank the CAOS Communication team, Naomi Kong and Jonathan Niavis, in spearheading this project. Also, I would like to thank the CAOS Advisory team, Jeffrey Lam and Abraham Yuen, for their guidance and expertise in making this project a reality. Lastly, I would like to thank the entire executive team, every Canadian optometry student, and sponsor in contributing to this project.

As always, if you have any questions, feedback or concerns please don't hesitate to contact myself in person or via email at president@caostudents.ca

Sincerely,

Brij Patel
CAOS President – University of Waterloo Chapter

MEET YOUR EXECS

2016- 2017

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Meraj Iqbalzada	Chapter Development Officer
Sarah Oh	Professional Development Officer
Shivani Mathur	Mentorship Events Director
Kristine Massicotte	Social Affairs Director

Visit caostudents.ca to learn more about what we do!

We are proud to represent a student association that is so strong and passionate about the optometric profession.

Optometry is an ever growing and changing field. Over the last few years, optometry has pushed boundaries to widen our scope of practice to help better care for patients. CAOS hopes to be there every step of the way to continue to bridge students to the real world.

EVOLUTION OF CAOS

CAOS celebrates over 25 years in the running. Here are some of our big milestones.

1990

Founded by University of Waterloo optometry students.

1990 - 1999

CAOS experienced tremendous growth, introducing the CAOS Handbook, CAOS Mentorship Program, and the Annual Provincial Associations Forum.

1996: Launched our first webpage.

2000 - 2009

Launched our line of merchandising for students.

Organized the annual Interview Day at UW for all Canadian optometry students.

We partnered with Doctor Eyecare Network on an annual talk, now known as EyeRecommend.

We organized our first World Sight Day Fundraiser for Optometry Giving Sight (OGS)

2010 - 2015

2010: We organized our OAO Annual Panel Night, inviting ODs from different practices to come speak and network with students.

2010: We launched a new website, including a Classifieds page for doctors to post and communicate with students.

2010: We launched our Summer Mentorship, now known as Summer Internship program.

2012: We organized the first annual Dining in the Dark fundraiser, in support of OGS.

2015 - PRESENT

A **HUGE** relaunch!

New website, new appearance and new programs.

SOME OF OUR FRIENDS FROM THE SOUTH

MCPHS

Massachusetts College of Pharmacy and Health Sciences (MCPHS) started its CAOS chapter in Winter 2015 and has already hosted a variety of informative and cultural events including Canadian Thanksgiving and Canada Day. MCPHS also held a fundraiser: raffling off baskets filled with Canadian goodies! As well, CAOS members received their free business cards and pins. In the upcoming year, we hope to include more fundraising initiatives, speaker events, CEO-ECO info sessions, and collaborative events with other CAOS chapters!

PUCO

Pacific University College of Optometry (PUCO) have been an official chartered group registered with our Student Optometric Association since 2014. We have 48 members, from 5 different provinces and 1 state! Our main events every year include Canadian Thanksgiving, sending students to the BCDO conference in Vancouver, and having Canadian doctors/companies come speak. We have a Canadian student Facebook page where we keep everyone updated on all things Canadian, including events, Canadian boards and Canadian job opportunities, and it also serves as a forum for new students to ask questions about living in the US. We try to involve American students in most of our events as well! Our board consists of three members, with one representative from the first, second and third year classes.

HOW TO MARKET YOUR WAY TO THE CAREER YOU WANT

Words by Pauline Blachford

In March of last year, I had the pleasure of speaking to University of Waterloo optometry students about what steps they can take now to ensure they're ready to launch their careers, right after graduation. We covered how to identify the right clinic, and how to show your value in a new role as an associate.[1]

In order to land that position that allows you to excel in your career, and at a practice that shares your values, it's worth developing a plan that will help you reach your goals. That's where knowing how to market yourself and your brand comes in: "a career brand is an image that portrays you as an expert in your field, attracts your ideal employer, and reveals how you can help their business," writes Matt Warzel, of MJW Careers, LLC.[2]

Here are some strategies optometry students and new graduates can use to develop their own career brand – one that properly markets your talents, and gets you the career of your dreams.

Develop a mission statement

It's important to have clarity around what it is you want in your career, and why. Going through the process of developing a mission statement can help develop and crystalize that clarity. Not only does a concise statement give you something to communicate to potential employers and new contacts: it can help you stay focused on what you want. Having a clear sense of purpose allows you to keep focused on what's most important, despite any obstacles that may come up.[3]

Your mission statement should include your goals, your core values, your successes, and what you have to offer.

Start by considering where you want to be in your career, identify your aptitudes, clarify your purpose, and define specific goals. Having a mission statement will help you hone in on the right opportunities for you, and will ensure you're prepared to seize them when they come along.

Make career connections

It's never too early to start making industry connections. They will serve you throughout your career, and as a soon-to-be or new graduate, new connections can lead to employment, business, or mentorship opportunities.

Finding a mentor comes highly recommended by Dr. Heather Cowie, a 2010 Waterloo graduate who is already an owner of two optometry clinics. A mentor can take you under their wing, and provide industry advice. Don't be afraid to ask an experienced OD if they would consider being a mentor. Experience, someone who can offer a different perspective, and seeking out more than one mentor are points to consider. You also want to ensure you're "mentor-worthy," and willing to bring something to the mentor-mentee relationship.[6]

When it comes to making the connections that can help you start your career, consider taking advantage of the university's established alumni base, alumni networking events, career fairs, or other mingling opportunities. Asking instructors or career advisers for practices or people you should be connecting with is another good place to start. Joining professional associationsor volunteering with related sight or eye health organizations are other good waysto meet people.

Remember: meeting lots of people, being helpful, being intentional, thinking long-term, listening, and following up go a long way.[7]

Link up on LinkedIn

LinkedIn is a great resource for staying in touch with industry professionals, instructors, and employers you've met throughout your academic career. It can also be a way to generate employment leads, or to follow up with recently made connections.

Publishing features on LinkedIn also allow you to promote your knowledge and the interest you have in your industry. You can also showcase your skills and other interests.

Many ODs also look for hires who are social media savvy. Ensuring your profile picture, basic information, and contact information are accessible and up-to-date is a good way to distinguish yourself and make a good impression.

To use LinkedIn effectively, ensure you have a profile picture uploaded, that you take advantage of updating the skills section, connect with people you know, and make an effort to add new or existing acquaintances to boost your network's reach. Students and new graduates also have access to the site's jobs portal.[8]

Don't underestimate the power of drafting a great CV

According to OptometryCEO, too many ODs are satisfied with a mediocre curriculum vitae –which signals the prospective employee is satisfied with a mediocre career. Remember that unless you're approaching an existing connection, your CV is your first impression. It's also a "game changer for those looking to land a position with some of the best optometry practices… [as] many students and new ODs spend more time worrying about where they are going to practice than time spent working on their curriculum vitae."[9]

A strong and comprehensive CV should include your interests, professional memberships, personal information, awards, and research and training. Interests and personal information can help establish shared values, while memberships and professional affiliations indicate your keenness to be part of your profession. Research and training is your chance to highlight specific areas of expertise, which can extend to experience in sales, marketing, or social media.

What else do you bring to the table?

According to the Academy for Eyecare Excellence, while your valuable technical and educational qualification is a threshold to be passed, once it's passed, it is not a potential employer's primary selection criterion. New graduates need to know how to elevate the skills, talents, and qualities that distinguish them from their technically qualified peers.

First, if you do find "the one" – the perfect practice for you – don't be afraid to do whatever it takes to convince the practice that they need to hire you. This includes getting creative by offering to first volunteer with the practice through an internship or practicum; by writing blog posts for the company's website or social media; or offering to do research for the practice.

Spend time identifying your transferable skills that could enhance a particular practice in specific ways.[10] This could be past sales or customer service experience that could apply to eyewear sales, or patient care. Extra, peripheral skillsets could be the difference between winning or losing the job of your dreams.

In sum

These are just a few strategies new and soon-to-be graduates can implement to not only find employment in the field of optometry, but find a meaningful role at a practice that supports your career goals. The above also apply to students who are looking to secure internships. While crafting a mission statement and taking the time to follow up with new connections do take effort, time spent on setting you and your career up for success is time well spent.

Pauline Blachford consults optometrists on how to reduce unbooked appointments, increase eyewear sales, and improve employee productivity. She also provides one-on-one career coaching to optometrists, with a special rate for optometry students and recent graduates. She has abundant experience in the eye health industry, including 17 years at White Rock Optometry in B.C. Pauline frequently presents at optometry conferences and is a regular columnist for the Canadian Journal of Optometry. For more information, visit paulineblachford.com.

Footnotes accessed on page 46.

Come to CAO Congress 2017 from June 28-30th in Ottawa

Learn, celebrate with old friends, meet new ones and stay for Canada's 150th birthday. In 2017, the Canadian Association of Optometrists will hold its 35th Biennial Congress in Ottawa and we are inviting you to join us. This Congress will be a very special one, not only because it brings together optometrists from across the country, but also because it provides a unique opportunity to celebrate Canada's Sesquicentennial – 150th birthday!

Look for more reasons to come at opto.ca in July

CANADIAN ASSOCIATION OF OPTOMETRISTS
ASSOCIATION CANADIENNE DES OPTOMÉTRISTES

1. Home of Congress
Gather at Ottawa's state-of-the-art Shaw Centre

2. Learn from internationally renowned speakers
22 hours of in person CE, plus additional online CE for attendees

3. Canada's Birthday at your front door
Stay and enjoy a party 150 years in the making

AN OWNER OF MANY HATS.

It takes a lot of work to earn your Doctor of Optometry (OD) designation. It also takes a lot of work to run an optometric practice. Optometry students are busy with courses like anatomy of the eye, histology and microbiology. Optometric practice owners are busy with issues such as human resources, marketing and retail merchandising.

The same word that helps you succeed as a student will help you succeed as a business owner. Preparation. As much as your university education wasn't just classes about conditions of the eye, running an optometric practice isn't just about hanging your sign and waiting for a ton of people to come in for eye exams every year for the rest of their life. No, running a practice is a multi-faceted endeavour that will have you doing many, many things.

An optometric practice owner must be prepared to wear many hats. A lot of hats. Maybe even more hats than a haberdasher. First you'll have to put on your pith helmet and explore areas to find the right location. Then you'll need your hard hat to build your location. Your thinking cap will come in handy while you choose a name, logo and target audience. A nice sun hat should be mandatory while you're out cultivating business and harvesting new patients. You'll also need a fireman's helmet. A lot. To deal with the stuff you'll deal with regularly. Stuff you never imagined.

But it can all be worth it if you're prepared to run a business. Much like you went to school to learn not just about the eye but also about becoming an optometrist, open your own practice ready to learn about all aspects of business. Understand that you will never know it all but commit to never stop learning. Ingratiate yourself to the people and businesses surrounding your practice. Study your competition. Learn from your industry. Learn from other industries. Train your staff. Train yourself. Don't just be a boss. Be a leader. Don't just be an eye doctor. Be a successful business owner.

In doing so you'll end up with the best hat of all. The captain's hat.

Words by Craig Comstock
Marketing Manager, Eye Recommend

BY THE NUMBERS

OVER
70
MENTORSHIP SITES
ACROSS CANADA

WE'VE RECOGNIZED
18
STUDENT DOCTORS
OF THE MONTH

IN 2016, WE HAD A
1:1
STUDENT TO DOCTOR
RATIO FOR
INTERVIEW DAY

THERE ARE
13
CAOS CHAPTERS

We were blown away by the quantity and quality of entries we received for the magazine contest!

Here are the 8 winning articles selected to be published in the magazine.

CONGRATULATIONS!

Dear Future Doctor,

Congratulations on entering optometry school, you absolutely deserve it! You have worked so diligently and persistently for many years to get to where you are. Only you know the time and effort you put in to maintain your excellent grades and extracurriculars, ace your OATs, and excel in your interviews. Entering optometry school is a life changing experience, as you will come to know. At last, it is in that moment that the trajectory of your life as you know it will completely change. As soon as you put your white coat on, you begin the change from patient to doctor, a challenging but exhilarating intellectual and spiritual transformation.

You know in your heart the countless times you have imagined your first patient, your first office, and your first mission trip abroad as an optometrist. You have dreamed of fitting a small girl with purple frames, of having her turn to her mother and say “Mum, is this what everyone sees like?”, like you once did. You visualize closing down an international eye camp for the day, only to re-open the shutters for a woman who runs to you and pleads, “Doctor, please look at me too – I can’t see.” You envision waking up every day with a passion to heal, to inspire and to be unapologetically passionate about your vocation. You are captivated by the idea of making a change in the world, however minute it may seem to be. Now, you have started the process of realizing your dream. Over the years in optometry school, though this energy and enthusiasm may fade and wane, you will regain it in the moments that fuel your inexplicable desire to be the doctor you dream to be.

When you first started optometry school, you couldn’t wait to meet your classmates, soon to become your future colleagues. They would soon become your family away from home, and uniquely so. You will attend classes for hours with them, play sports, join associations, embark on mission trips abroad and practice clinical techniques on each other. By the end of your time in optometry school, you will know every person by name, the nuances in their “doctor voice”, you may even know them by their distinctive iris architecture.

You will soon come to know that the masses are sometimes misinformed. You will join all the associations you can, attend as many talks and events as your tight schedule allows you to. You will begin the process of advocating for your profession, and educating as many as you can about your field. You will give optometry a voice, and you will lobby to make it a better career for those that will follow you. It is with this enthusiastic voice and thirst for knowledge that one day you will create real and lasting changes in the modernizing world of optometry.

One day you will enter a room with cadavers, and you will clearly see the end of your life. Everything you are working so hard for will seem meaningless. You will question if the long hours and sedentary lifestyle are worth it. Eventually, you will come to the conclusion that it is in life only that you are able to pursue your dreams and make a difference in the world as you know it.

With your training, you will learn that before you can become a doctor, first, you must become a patient. You will spend hours in pre-clinic, refining your techniques on your fellow classmates. The first time you successfully get a gonioscopy lens in, you will sigh with relief. As a patient, you will realize quickly that your corneas heal almost instantaneously to the multiple nicks from the tonometry probe. You will marvel at the ability of lenses to distort and change the perception of the world around you. And you will learn the hard way that, there seems to be a direct relationship between prism bars and tension type headaches.

Some days, you will want to take a break and refocus on your other passions. You will want to have absolutely nothing to do with optometry. On those days, you will practice and perform an amazing musical piece. You will update your blog, take a stunning photo, write an honest article. You will score the winning goal, go for a run, choreograph a dance routine, and learn how to crochet. Whatever your passions are, you haven't lost them in the humdrum of optometry school. If anything, you have realized that in your years in optometry school, you have explored other activities you enjoy. You have picked up new skills, you have found purpose in many undertakings, and you have shared them with others around you.

Your purpose of being a doctor was to always help others, especially those who desperately need your services. You collected glasses and did lensometry for hours to earn enough points to embark on a mission trip. You boarded a plane to go to a remote location and be of assistance to those who needed you. You weren't paid, you worked long hours and you learned a lot from the patients who embraced you and expressed their gratitude. You didn't work for money. You worked for the experience that you would fondly remember for many years after.
On the day of your interview before optometry school, your interviewer asked you, "Why do you want to be an optometrist?" Wiping away the beads of sweat, you recited your well researched and rehearsed explanation. That explanation you once delivered with so much assurance has changed dramatically throughout your school years, shaped by a new layer of experiences and strengthened by a growing level of understanding and maturity.

And thus you will enter and endure optometry school. You will receive your white coat, study for hours on end, make countless mistakes and learn from them. Multiple times you will reconsider, you will doubt, but still you will persist. You will realize your dream, and one day, your name will be up with all of your colleagues' at the convocation ceremony. You will add a title to the beginning of your name, that of Doctor.

Dear Future Doctor, one day, it will be you and your first patient. And you will have finally completed that journey from student to doctor. The past few years will culminate in that one moment. And you will be grateful for a journey perhaps which has been so difficult, so long, but ultimately, so incredibly worth it.

With great hope for your future,

Your Young, Naïve and Passionate Student Self

OD Candidate (20XX)

By Sherene Vazhappily
Calgary, AB

WHERE DOES OPTOMETRY STAND TODAY?

By Merajuddin Iqbalzada Calgary, AB

Today, one thinks of a general practitioner (GP) when there is a health-related issue. Likewise, one thinks of a paramedic in a case of medical emergency or a dentist when oral care becomes a concern. However, it is not quiet the case when it comes to vision care. As a health care professional, the fundamental goal is to provide an optimized patient-centered care that respects the values, needs, and quality of life of the patient.

How would patient care look like without Optometrists (ODs)?

While GPs are not exclusively trained for vision care, Ophthalmologists (OMDs) are less widely available. This would result in an unreasonable, extravagant, and ineffective triage system, where OMDs would have time only for those with vision/ life threatening situations, while GPs unequipped to provide comprehensive eye exams. Thus, there would be a great lack of preventive practice; Many eye disorders would go undetected or underserved such as uncorrected refractive errors, binocular vision (BV) problems, glaucoma, age-related macular degenerations, diabetic retinopathies, and many other preventable/ treatable progressive diseases – reflecting a reduced standard of care at a societal level. And this is exactly the case in the developing countries where there is a great lack of ODs.

The three "O" professionals of eye care!

Optometry is a crucial part of the puzzle that completes the ideal image of vision-care system in our society. It fills the gap and forms an essential bridge between OMDs and Opticians, the two extreme ends of the ocular health service spectrum; It is the team effort and interdisciplinary respect among these professionals that results in best patient care. This triad of professionals, intrinsically, forms an efficient and cost effective triage system to provide best vision care to the community. An Optometrist is the first impression of the system and is like a hub, where it acts as a checkpoint to screen, treat, manage, monitor and effectively and appropriately direct the influx and efflux of patients to their respective destination of care; Whether it is simply to deliver prescriptions to Opticians for providing specular therapy or referral to OMDs for sight/life threatening conditions. For instance, the early detection of ocular health and BV problems in children are best treated by ODs. This care is crucial because it has direct impact on education and future lifestyle of these children. Among many other professionals, ODs not only contribute to the health care system today, but also has a fundamental influence on how our society will look like in the future.

What is the reason behind many challenges ODs face today?

Unfortunately, OD's role as a primary eye care physician is under-realized and there are many challenges facing the profession such as: online dispensing, remote refraction, sight testing, inelastic scope of practice, and reduced government remunerations just to name a few. Furthermore, a significant number of the population primarily and exclusively visit GPs for ocular issues and thus receive less than optimal treatment, as opposed to comprehensive ocular care provided by an OD. I believe, all such occurrences narrow down to one root issue – the lack of public awareness about Optometry profession and the importance of its role, not only in optimizing patients' quality of life through corrected vision and overall health, but also in detecting, managing, and/or preventing sight and even life threatening conditions.

Every step counts!

How much we contribute in raising awareness today will influence on how expansive and appreciative our scope of practice will be tomorrow. We should take every opportunity to advocate and educate members of our community on the importance of complete eye exams. For instance, surprisingly, a lot of people are not even aware that ocular exams are annually covered (by the government) for those under 18 and over 65, while health check may also be covered for all age groups depending on the province of interest. Thus, in our next encounter with a teenager, a parent, or an elderly patient, simply informing them about this notion of government-covered eye exam will be a beneficial and harmonious step forward. There are limitless avenues we can embark to outreach to the community; Every single step counts towards the goal, which is to establish such level of awareness where one naturally thinks of an Optometrist, as a primary care provider, when it comes to any eye related concern.

MALAWI

By Anonymous

The weighted heat pressed down on my shoulders, and swirls of dust licked at my skin. I walked into the compounds of the hospital, the brilliant lavender of the jacaranda trees adding colour to the hot, blue sky. Everything else felt and looked hazy: the streets, the air, the myriad thoughts that swarmed through my head. I was in Malawi, some nearly 15,000 km from home, and here I'd be for close to two months.

Approaching the eye hospital, I saw a quilt of material on the lawn, a patchwork of the shirts and dresses that belonged to the patients staying in the wards. Freshly cleaned using soapy water in plastic buckets, the clothing was spread out to dry in the sun.

As I entered through reception, I made eye contact with several young mothers and smiled in greeting. Some of them returned a warm smile and laugh through our gaping lack of common language. They thrust their children forward and pointed to my camera.

Without speaking any Chichewa, I understood: "Take a photo." I did, and enormous smiles and raucous laughter erupted upon viewing the image.

Some of these young women, touting small screaming children on their backs wrapped with vibrant chitenges, looked at me with stunned expressions. When I saw the children, a pit dropped in my stomach. Nasty eye infections, retinoblastoma, and cancerous growths looked back at me. I wondered what I could possibly do. Days at the hospital quickly became routine. I spent many hours peering through slit lamp oculars. There were cataracts, geographic corneal ulcers, cases of allergic keratitis completely devastating the cornea due to a positive HIV diagnosis, and more traumatic eye injuries than I could count.

At home, in a Canadian setting, we say, "When you hear hoofbeats, think of horses." This is to say, don't think of zebras, an uncommon animal (or diagnosis), but think of the condition more likely to present in that circumstance. Well, I was in Africa, land of animals such as lions, elephants, warthogs, and yes, zebras. I was seeing zebras, indeed. All of these ocular conditions were not like anything I'd have seen at home; the way HIV prevented a person from healing, the way a patient must be essentially blind before being able to undergo cataract surgery, the ocular trauma from knife attacks, the neglected bacterial infections and the ringworm infections. This was normal to see in Malawi.

One day, I watched cataract surgery in the hospital's operating theatre. After putting on scrubs, surgical foot and hair coverings, I was allowed inside. There were four beds side by side, a patient on each one, and at least one surgeon and a surgeon-in-training at each bed. I had observed cataract surgery in North America only a couple of months prior. There, I was appropriately attired and sat well out of the way. In Malawi, I was directly next to the surgeon and the patient undergoing the procedure. I could hear the clink of the metal instruments against the tray as they were passed hand-to-hand. I could hear the mutterings of the surgeon to the assistant. I could see the trainee's perspiration and sense the strain and concentration.

In nearly two months in Africa, I had become accustomed to the daily power cuts, loss in water, and the more than spotty wifi. Even though a power cut schedule was printed in the newspaper, these outages were largely unpredictable. Imagine trying to perform ocular surgery in such an environment. Along with the price tag of modern phacoemulsification technology, this meant that the skilled surgeons used a much more rudimentary form of surgery.

I watched closely as they snipped through the superior bulbar conjunctiva to expose the sclera. They anchored the eye by threading a needle with string through the conjunctiva and fastening it to a clip against the sheet covering the patient's face. They made a large scleral incision and another corneal, and proceeded to work away at removing the lens with an instrument that looked like a little metal loop. In most cases, the lens was so dense that it just popped out in one piece with the loop. In some instances, more effort was involved with removing lens fragments, and it was not uncommon for complications to occur during surgery. Given the great skill involved, the lack of precise modern technology and the fact that there were trainees involved, more than once did a more senior surgeon have to step in to save the day… and the eye.

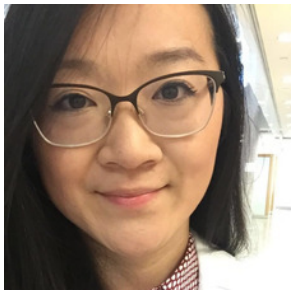
At the end of each day, I always wondered what good or what difference I could possibly make in a place like Malawi, a part of the world faced with the struggles of any developing nation. Ultimately, I decided that it was not naïve to conclude there was very little I could do as an individual. Be the change you want to see in the world. Sure, I can attempt that, but with the challenges and uncertainty of working in a country like Malawi, it's hard to really see oneself as the change one wishes to see.

Sometimes all a person can do is see the constants in the uncertainty. In Malawi, that meant learning, constant learning.

And a smile. The warm heart of Africa, as Malawi is known, never let me down there. From the lovely young mothers at the hospital, to the strangers who greeted me in the market or waved to me from a minibus, and to the children who chased me to down just so they could sing and dance around me, Malawi was consistent and predictable there.

For a country that deals with these zebras, these advanced and devastating disease processes, a country where much is unpredictable, a country that is greatly impoverished, Malawi is rich in the warmth of its people and their easy smiles.

What I could definitely do is smile back. For the moment, for the change that I can realistically impart, that is enough.



THE GATEWAY DRUG TO REAL LIFE

By Courtney Fan Mississauga, ON

I thought this was it. I am now in my dream profession and nothing could go wrong. I will be happy for the rest of my life and I will never complain about a single thing ever again! Life is good and I am set. In the words of President Trump, "WRONG, WRONG, WRONG!" Within two weeks of school, I was desperately bored. I was tired of adhering to the 8:30am to 5:30pm schedule every day and sitting in a classroom where I was either too hot or too cold. I wanted something more out of the optometry program and out of life in general. You will not truly believe these words unless you experience them for yourself, but the most important life lessons you learn during your school years are not taught by professors. I did not learn how to manage my time, effectively network and communicate with others, and truly understand the future of optometry by sitting in a classroom listening to lecture after lecture. I did so by actively getting involved in every club at the school and taking on major leadership roles. I gave myself a personal goal to attend at least one optometry conference per year, granted I would somehow obtain the financial ability. This was the best decision I had ever made and the experiences and knowledge that I obtained are worth every Canadian nickel.

Through joining student-organized clubs, I was fortunate enough to receive a travel grant that allowed me to attend my very first conference in Sacramento, California. I had the pleasure of meeting incredibly intelligent, interesting, and inspirational individuals such as my hotel roommate whose life had been training dolphins at the local aquarium only 12 months prior. I was mesmerized by the level of diversity within the optometry student network in the states and the opportunities to network with established doctors. After attending this first conference, I was hooked! I wanted to attend every conference opportunity I could find!

I quickly realized that attending every conference is obviously not feasible for a full-time student with a gigantic financial loan; however, I am now a huge advocate for attending conferences. Many valuable conferences support student attendance and the registration is free or significantly reduced. For example, I recently attended Vision Expo West in Las Vegas for four days and the registration was completely free! I immersed myself in the new technological advances in our industry and attended all the recommended continuing education sessions for students. I also had the opportunity to try out new equipment such as the Cirrus HD-OCT angiography, which performed an angiography on my eye without the injection.

By getting involved in the optometry program and profession, it opened my eyes to new career opportunities and made me realize that we can all do so much more than just eye exams. We can get involved to develop new technology, advance treatment for earlier detection of diseases, motivate and mentor young professionals, advocate for wider scope of practice, and so much more! The future of optometry is in our hands and the only way we will know how to improve it is to understand its deficiencies by being active and knowledgeable members of our profession. If I could go back in time I would kick myself for thinking “this was it.” I owe many thanks to all the organizations that sponsored my travel grants to attend conferences and I encourage all of you to get involved and receive the same opportunities as I did. I felt it would be utterly irresponsible of me to graduate optometry without letting my successors know about the value of being involved. So many opportunities would not have come my way if it were not for my passion and desire to get involved. Getting involved for me is now an addiction, and although I would not recommend this “drug” to everyone, I can definitely testify for its efficacy on overcoming some of the mundane days as an optometry student.

DELIVERING BAD NEWS

By Sunny Wang Vancouver, BC

I was sitting next to my mentor, an ophthalmologist, as he was talking to our patient, a 33-year-old Asian male who was diagnosed with severe retinitis pigmentosa. He was referred to our office after he had failed his vision test at the local DMV while renewing his driver's license. Our HVF 24-2 results indicated he had less than 5 degrees of central vision left in both eyes, yet the patient was asymptomatic and hoped he could get his driver's license back. The patient is a computer programmer with a wife and a 2-year-old daughter. He relies on his vision for work, and to make a living. This was in my last clinical rotation site, the biggest co-management eye center in Boise, Idaho.

"Sir, we just took some images, along with OCT scans, of the back of your eyes. It appears that your retina and the layer underneath have thinned significantly. We also see that there are a lot of black clumps, of which we call bone spicules, in your mid-peripheral retina. Your visual field test showed that you have less than 5 degrees of central vision left in your better eye …".

The patient looked dazed, and said: "Can I get some new glasses?"

"Unfortunately this cannot be fixed by wearing glasses. We would have to refer you to a retinal specialist to have this looked at again."

He frowned and asked: "but I can still have my driver's license back right? Here, I brought my forms."

My mentor moved his chair closer to the patient and looked at him sincerely in the eyes, "I am sorry, but I am afraid I cannot sign those forms. You have less than 5 degrees of vision left, which puts you in the legally blind category. Even though your central vision is still at 20/40, I cannot pass you for a driver's license."

There was a pause, the patient nervously rubbed his hands on his jeans, he looked at me and my mentor, with great prudence he asked, "Am I going blind?"

My mentor put his hand on the patient's shoulder, "I know this is a lot to take in. You may not lose all your vision... there are many programs and organizations that could provide you with low vision devices..."

After my mentor discussed the plan of action with the patient. I was left to greet the patient's family members, and to answer any questions that may arise. The patient's wife and daughter were waiting outside in the parking lot. I took a deep breath, maintained calm, and told the patient's wife the diagnosis and our treatment plans as unbiased and objectively as I could. She

listened attentively, and consistently exchanged looks with her husband. It was no doubt that this was big news, and that it would take time for them to process. I was, however, glad to see that instead of panicking, the family was thinking with a clear head on what kind of changes they should be making to accommodate the patient's vision loss.

Denial, anger, bargaining, depression, and acceptance, these are the 5 stages of grief that people go through. We have role-played delivering bad news in school, yet, in reality, it is much different. You are facing a real human being who is actively losing their vision, not just an actor who is pretending to have visual impairments. My biggest worry with giving bad news is how I would handle patients' reactions of the news. Yet, facing a real situation for the first time, it isn't as dramatic as I pictured it to be. However, it makes me realize, as an eye care provider, how big of a responsibility we have towards our patients' well-being. We are facing real people, not a textbook or computer. When people hear news that could permanently change their lives, it is human for them to feel upset, shocked, sad or angry. In these situations, our job as a health care provider is to remain calm and rational for our patients. In addition, my patient and his family showed me that people could be stronger than I thought. The best thing I can do is to treat my patients and their family members as capable individuals and to provide them with compassion and my expertise to guide them every step of their way in order to overcome difficult times.

COMMUNITY INVOLVEMENT AND INTERPROFESSIONAL COLLABORATION

By Diana Nguyen Hamilton, ON

Canada is known as a multicultural country. We welcome immigrants and refugees and I am proud of that. When my parents first came to Canada as immigrants, their top priority was to find a job and a home to live in. The last thing that came to their mind was to venture out and find a family physician, dentist or optometrist in town. However, as they settled into their new lives, they managed to find a Vietnamese family physician and dentist because they did not speak English at that time.

Unfortunately, there was no known Vietnamese optometrist in our local area. While growing up, my parents never thought to take my brother and I to an optometrist because of the language barrier and they assumed vision problems mainly affected the middle-aged or elderly. However, my brother started to have vision problems at an early age and his teacher recommended that he visit an optometrist. Prior to seeing the doctor and getting a refractive prescription, it was difficult for him to maintain schoolwork and focus in class because his vision was impaired. If my parents understood the significance of seeing an optometrist, they would have gone to one before my brother's vision worsened. Therefore, I believe it is so important to educate patients about the healthcare system and health in general. We can achieve this by establishing strong community involvement and interprofessional collaboration.

Furthermore, health and illness are influenced by several factors other than biology, such as social determinants. Social determinants are connected to various things including income, education, and ethnic groups. My family is a great example since they had a limited amount of education to understand the significance of having an eye exam and their language barrier prevented them to reach out to an optometrist. As a future doctor, being an optometrist holds more than a medical responsibility. I would also be responsible to educate my patients about the healthcare system. Since Canada has one of the highest immigration rates, educating new citizens and their community about the healthcare system would be extremely beneficial. Setting up healthcare booths at local community events would be a great start.

Additionally, each healthcare professional should encourage their patient to seek other healthcare specialists if their illness needs medical collaboration. For instance, if a family physician diagnoses a patient as a diabetic, the physician can refer the patient to an optometrist to monitor the possibility of developing diabetic retinopathy. In turn, the optometrist can also ensure the patient is regularly monitoring their glucose levels since they examine their ocular health. If the patient has difficulty controlling their glucose levels, the optometrist can possibly recommend the family physician and the pharmacist an alternative choice of medication.

As you can recognize, each profession is working as a team to improve the quality of care for the patient and each clinical test is interconnected to each other. Training future doctors to collaborate together and not against each other will benefit the patient and reduce the burden of diseases on the Canadian healthcare system. With the combination of interprofessional collaboration and educating the community, we can achieve optimal health for patients.

DEAR TRYING

AN ONLINE DISPENSING PROBLEM

By Marcia Mitschke Lumsden, SK

Dear OD To Be,

My friend thinks he can update his prescription for his glasses/contacts by himself without consulting an optometrist (i.e. when he orders them online). He says his prescription is a -2.75 and he wants to change it to a -3.00. I think he is wrong to change his prescription without talking to an optometrist. What are your thoughts?

Sincerely,

Trying To Be A Good Friend

Dear Trying,

You're right! Your friend should definitely see an optometrist if he thinks his prescription has changed because the change could be caused by something other than natural aging. Updating your prescription and making sure you are seeing your best is a main part of an optometrist's job! Depending on how strong the prescription is, the power of the contact lenses prescription might be different from the glasses prescription, due to the fact that contact lenses are on your eyes instead of in front of them – your friend's prescription is low enough that this probably wouldn't be a problem, but it is always a good idea to check!

As well, the prescription change that your friend thinks he needs is a very small change (only one "click" on the medical device, the phoropter, that optometrists use to measure a patient's prescription), so he would probably not notice a large improvement in his vision. If his vision has decreased enough to think he needs a change in prescription, it has probably changed by more than just 0.25 D. Any time your vision changes for any reason, including temporary changes, it is recommended to see an optometrist to make sure your eyes are still healthy.

I would also strongly recommend that your friend not order his contacts or glasses online!Did you know that almost 50% of contact lenses and glasses purchased online end up having the wrong prescription, are made with missing features that could affect your vision, or don't pass safety standards? Dispensing eyewear is a regulated act in Canada because glasses and contact lenses are medical devices; many online glasses/contact lens retailers are not associated with a regulated eye care professional like an optometrist or optician, making them illegal operations! Eye care professionals like

optometrists and opticians will check all the safety, prescription, and fit of the optical device to make sure they are exactly what was ordered and suitable for what the patient needs, whereas there is no guarantee that what you order is what you will get if you do it online.

While the online products might be cheaper, faster, more convenient, etc., do you really want to risk putting something of potentially lower quality onto or near your eye?

If you think about it, contact lenses are essentially foreign bodies that you are putting into your eye, so you want to make sure that everything is fitting correctly to reduce the chances of long-term damage! Damage to the surface of your eyes from contact lenses (including damage caused by dry eyes) is actually incredibly common, and if not monitored by an OD could cause long-term reduction in vision! Keep in mind that Doctors of Optometry check that your eyes are healthy, and are also able to see some systemic conditions before symptoms manifest (i.e. diabetes, high blood pressure, MS, tumours, etc.). Aside from ensuring your eyes are healthy, ODs will help fit the contact lenses or glasses properly to your eyes and face, and make sure they are ordered in the correct power to help you see your best.

The Bottom Line - there is just no substitute for the quality and personable experience you (should) get with your optometrist regarding anything to do with your eyes!! As you can tell, online dispensing is a really hot topic in optometry right now so thanks for asking this important question! I hope your friend makes a safe decision and sees his optometrist to change his prescription and order his glasses and contacts!

Sincerely,
OD To Be

THE IMPORTANCE OF DEVELOPING A 360-DEGREE PATIENT AWARENESS

By Sally Dickinson Bedford, NS

Over the past few years, I have questioned many different mentors, clinical supervisors and professors on when they felt they had crossed from the foggy wilderness of being students into the clear skies and definite realization that they were, in fact, doctors. My query usually included, "When did it all seem to come together for you?"

The responses I received have ranged from "sometime in my final year of optometry school" to "at least 5 years post graduation" to (most honestly, and likely most accurately) "it is still coming together for me, every single day". I found that every clinician was different, but a key piece of the transition from student to doctor remained constant: one can begin to wear his or her white coat in the spirit of a true physician only once he or she has logged a significant amount of time in clinic.

As I write this, I am in the final stretch of my fourth year Ocular Disease and Therapeutics rotation. I have examined and determined a management course for countless common ailments such as cataracts, diabetic retinopathy, and dry eye disease. I have seen rare pathologies such as phthisis bulbi and uveitis-glaucoma-hyphema syndrome. I have tested and measured and poked and prodded at people with Lupus, Behcet's disease, HIV positive immune status, Phelan-McDermid Syndrome.

And through it all, I am finally realizing what it truly means to be a doctor. I believe that the following anecdote from the frontlines of the ODT rotation illustrates what it is.

Recently, I had the pleasure of examining a 62-year-old man who had idiopathic pulmonary fibrosis. He was diagnosed 6 years ago, at which time he was told that the most generous estimation of his life expectancy was 5 years. He shrugged his shoulders in my exam lane during history taking, saying, "And here I am. It's amazing, really. Now my pulmonologist is saying I could live quite a bit longer even". I knew he was terminally ill, and I asked about his lung function. Did he use supplemental oxygen? "Yes, but only for about 15 minutes twice a day. I know I'll have to increase it as time goes on," he told me. During the course of the examination, I noted mild-moderate cataracts that were only slightly affecting his vision. As always, I counseled him on their existence and explained that we would continue to monitor them. I thanked him for coming in and brought him to be checked by my supervising ophthalmologist, a seasoned clinician who delights both in providing patient care and teaching students.

Once again, the patient was questioned about his lung function. "What is your blood oxygen level averaging these days?" the ophthalmologist asked. The answer was a

worrying 93%. "We are going to perform cataract surgery on you right away, if you are willing" declared my supervisor. He explained that once the blood oxygen level dropped to 91%, it would be too risky to safely remove the cataracts. By performing the surgery early, we possibly could improve this patient's quality of life in his remaining years. To date, no one could help the progressive scarring in his lungs, but at least we could provide him with clear vision for the rest of his life.

I had gone through my examination as usual, choosing to watch and wait on these cataracts that were not "ripe", that were not yet ready to be removed. I had missed the concept of thinking about my patient as a whole person. I had missed the idea of thinking about his future. I learned a valuable lesson that day and thanks to my supervising ophthalmologist, I felt as though I suddenly had gained a new level of awareness.

As students, we know that patients come in all ages, all shapes and sizes, all walks of life, all religions, all ethnicities, all tiers of socioeconomic status, all levels of education —whatever parameters of human life one can imagine. We begin to become suspicious of certain pathologies in certain peoples. We learn to adapt our examination and counseling techniques to be appropriate to our patient. We burn the midnight oil in study rooms and spend hours in pre-clinic practicing exam techniques to become more proficient. We are constantly reminded of the importance of developing a patient-centered, egalitarian system of care. We quickly learn that reading through textbooks and PowerPoint notes is completely different from looking at a living pair of eyes in the chair in front of us.

And yet, we are not truly doctors. Not yet.

As my supervising ophthalmologist showed me, being a doctor means having a 360-degree awareness. It means considering who exactly your patient is, what their desire for care is, and working together to find the optimal treatments for them. It means asking thoroughly about their past, examining them closely in the present, and projecting ahead into their future.

DID YOU KNOW?

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THYROID EYE DISEASE PROGRESSION TO OPTIC NERVE INVOLVEMENT

By Brendan Warner Regina, SK

CASE REPORT

Abstract:

Thyroid eye disease (TED) in the absence of appropriate treatment can lead to the involvement of the optic nerve as seen in this case report by the decrease of visual acuity in the right eye and subsequent OCT imaging. Risk factors present in this patient for developing TED included formerly treated systemic hyperthyroidism through radioiodine therapy and being over 60 years of age. Additionally, being of male gender, he would likely experience increased severity but not prevalence of TED compared to women. Common classification systems currently used in the optometric community surrounding TED may be insufficient in light of new classification systems such as VISA. Even though optic nerve involvement in TED is rare, it is important to determine this early to initiate aggressive therapy and preserve vision.

Background:

Thyroid eye disease (TED) is an autoimmune infiltrative and inflammatory process which has a pathogenesis that is not fully understood.[1-3] The ocular manifestations can be present prior to or following thyroid dysregulation disorders such as hyperthyroidism and hypothyroidism, however euthyroid individuals may also experience TED.[3-4] Diagnosis generally relies on a number of clinical signs and the most commonly used classification system to indicate severity is the NOSPECS mneumonic.[5-6] Though TED is often self-limiting,[7] if proper diagnosis and management is not pursued, irreversible vision loss may be experienced. Therefore, it is practically important to identify those individuals with TED whom require treatment. The following case describes a TED presentation that was misdiagnosed as chronic dry eye and allergic conjunctivitis and progressed to measurable sight loss prior to receiving appropriately directed care.

Case Report:

A 71-year-old Caucasian male presented having an emergent chief complaint of puffy, watery eyes with variable and decreased vision OU over the past two months. He stated that his dry eye symptoms had also increased during this time. There was no pain in or around the eye and he denied any injury or foreign body sensation. The last eye exam he received was through a different clinic seven months ago. Relevant systemic diagnoses included endocarditis resulting in a valve replacement three years prior, thyroid ablation eight months ago to treat systemic Graves' disease, kidney anomaly which remained stable through regular ultrasound monitoring, and sleep apnea which was treated with a CPAP therapy mask. There was no previous history of diabetes, hypertension, lung problems, or allergies noted upon intake. The individual mentioned that he had also

previously been diagnosed with mild amblyopia in his left eye secondary to an eso-microtropia. After evaluation, the best corrected visual acuity (BCVA) was 6/7.5+ OD and 6/12 OS. Anterior segment showed Grade 3+ MGD, short Tear Break Up Time (~3s) and marked chemosis inferiorly in both eyes (OU). Intraocular pressure (IOP) through Non-Contact Tonometry (NCT) had a reading of 13mmHg OU. Due to the anterior segment findings primarily, a first line dry eye treatment regimen was started consisting of warm compresses 10-15 minutes bid and Systane Balance Artificial Tears being used q2h during the day.

At his one-month follow up appointment, minimal improvement in symptoms were experienced and the chemosis OD appeared objectively worse, spanning two quadrants rather than just one. Due to minimal improvement from first line dry eye therapy and the increased chemosis, a diagnosis of dry eye with chronic allergic conjunctivitis was suspected; therefore a steroid trial of 0.5% loteprednol etabonate gel was prescribed bid. A follow up appointment was scheduled for 3 weeks.

The subsequent appointment showed only slight improvement in the patient's subjective symptoms of dry eye while on the steroid eye drop, however a decrease in BCVA OD to 6/9+3 was noted objectively while OS remained stable. Tonometry following the steroid trial did not show a steroid response giving a reading of 12mmHg OU through Goldmann Applanation Tonometry. Marked chemosis of the bulbar and inferior palpebral conjunctiva was noted OU. As the steroid did not have the desired effect, the patient was advised to discontinue this medication and continue the previously prescribed dry eye treatment until he could be seen for a referral workup and have other treatment options considered.

At the workup to referral appointment, nearly 8 weeks after the initial presentation, suspicions of systemic involvement were further investigated. During this appointment the patient reported constant pressure and tension in the eyes but no itching was experienced. Due to the serial timeline associated with thyroid ablation therapy and onset of swelling symptoms, thyroid eye disease (TED) was suspected to be the main cause of the majority of symptoms being reported. BCVA had also decreased again OD to 6/12 with no improvement with the use of a pinhole. Bulbar chemosis was graded at 1 while conjunctival injection remained stable at 2+. There was also an increase in IOP measured at 17mmHg OD and 19mmHg OS. Baseline exophthalmometry measurements indicated 18mm OU with a base of 110mm. A referral appointment to an ophthalmologist was set as topical steroid treatment was shown to have no effect and systemic steroid prescribing falls outside the scope of practice of optometry in the practicing optometrist's region.

At the next follow-up appointment, 6 weeks after the referral was started, the patient returned following a course of IV steroid q6h for 24 hours previously in addition to an 80mg oral Prednisone therapy which had been initiated the previous day by the ophthalmologist due to optic nerve head swelling noted OD. BCVA was measured to be 6/9- OD at this appointment and baseline Optical Coherence Tomography (OCT) scans were taken (Fig. 1). Significant nerve swelling OD, with associated choroidal folds, was measured to be 1001um through OCT imaging compared to 519um OS, which was later found to have mild swelling as well through a

repeat OCT scan. A slight enlarged blind spot was also suspected on the 30-2 Humphrey Visual Field that was performed; however no specific defect was noted in the Pattern Deviation Plot and only a generalized depression on the Total Deviation Plot was seen. Lateral gaze restriction was also noted through Broad H testing.

One month later, 6 months and 5 days after the patient's initial presentation, periorbital swelling had decreased significantly but was still present on the right side more than the left. BCVA was stable at 6/9+ OD and 6/12 OS. Bulbar injection and chemosis had also decreased significantly. Optic nerve head swelling had decreased OU to 520um OD and 428um OS through OCT imaging (Fig. 2). Exophthalmometry and other anterior segment findings remained stable. Visual field testing yielded further depression OU but this did not correlate with findings found through fundus examination and OCT imaging. The patient's most recent blood work also indicated low free T3 levels, but all other measures of thyroid hormones were within normal limits. The level of TED was now classified as Class 6 OD and Class 2 OS according to the NOSPECS classification system. There was the possibility that a Class 4 could be considered as there may be extra ocular muscle involvement; however considering the normal order of muscle inflammation (inferior, superior then lateral recti)[7] there was hesitancy to classify it in this way. The patient has been encouraged to continue current therapies and return to the clinic for monthly monitoring for stabilization or resolution of disease.

Discussion:

Optic Nerve Involvement in TED

The severity of TED is considered greatest when the optic nerve head becomes involved; however the likelihood of this happening remains relatively low. There are four mechanisms believed to be the cause of optic nerve involvement in TED including orbital apex crowding, elevated intraorbital pressure, ischemia precipitating an Anterior Ischemic Optic Neuropathy, or optic neuritis.[4] In patients previously diagnosed with TED that had not received suppressive or surgical thyroid treatment previously, a prevalence of 9.9%[1] was demonstrated for those that had optic nerve compression present. Other literature reports the range as 5-10%[4] for cases involving the optic nerve. Better visual recovery is expected in cases treated sooner, however up to 55% of individuals that experienced sight loss due to optic nerve head involvement of TED can remain legally blind or have severe visual impairments following treatment.[4] Treatment time to recovery of vision ranges from 1-14 months, however the average has been reported at 5.25 months.[4] Hormonal status may be significant in determining which type of TED is most likely to progress to involve the optic nerve. Euthyroid status was 58.6% of the small population developing optic nerve involvement in the study by Mensah et al, while hypothyroid status presented with optic nerve involvement 24% of the time and hyperthyroid status 17.2%of the time.

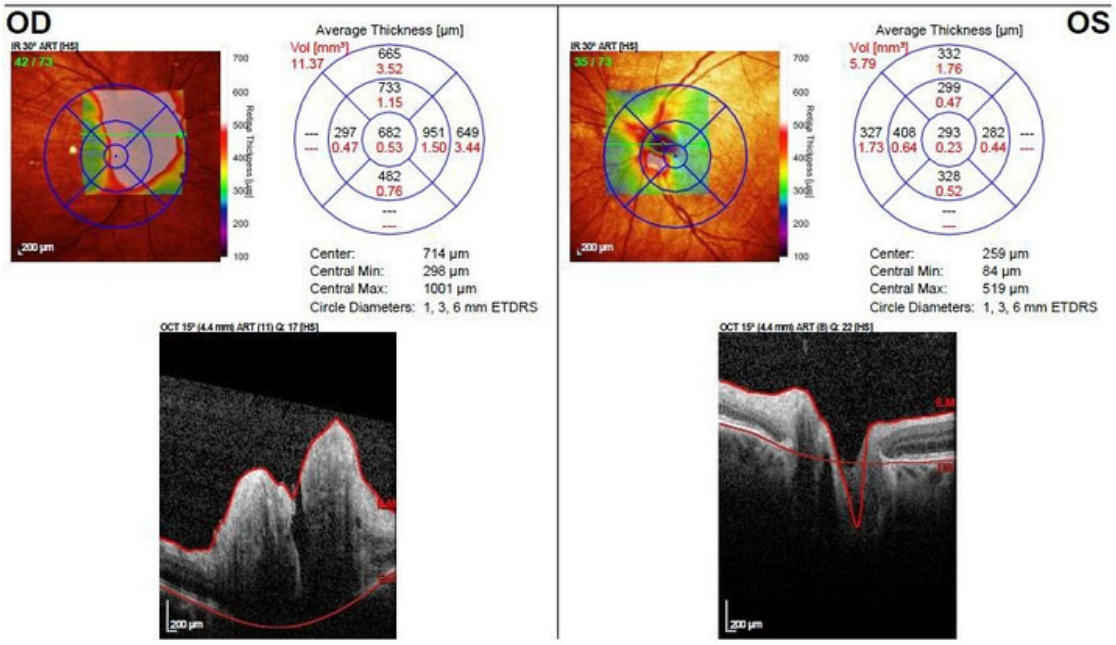

Figure 1: Heidelberg engineering Spectralis® Tracking Laser Tomography scan of the optic nerves prior to systemic glucocorticoid treatment. These results were imaged 7 weeks after the first measurable decrease in visual acuity OD. Visual acuity on this date was 6/9- OD (down from 6/6) and stable at 6/12 OS.

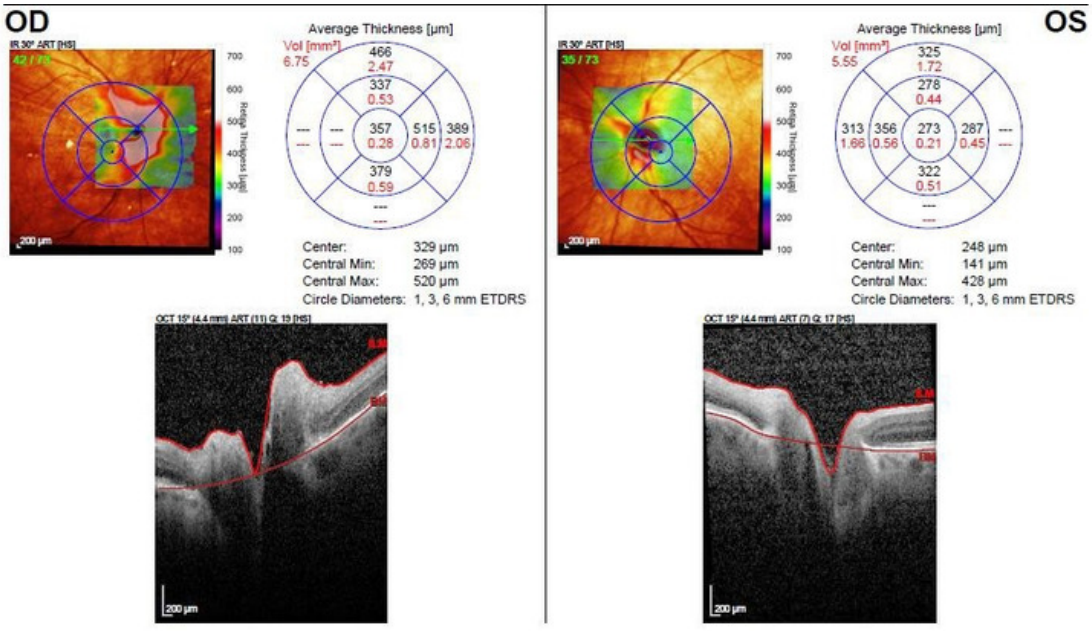

Figure 2: Heidelberg engineering Spectralis® Tracking Laser Tomography scan of the optic nerves after one month of systemic glucocorticoid treatment showing significant reduction in swelling at a central maximum height now of 520um OD and 428um OS.

Thyroid Dysregulation and TED

A concomitant diagnosis of a thyroid dysregulation, either prior to or after TED signs are noted, has been shown to be a risk factor in developing TED.[3] The prevalence however is different when examining hyperthyroidism and hypothyroidism. The majority of patients that experience TED tend to carry a diagnosis of hyperthyroidism at 92.4%, [3] however even those with hypothyroidism have been shown to experience TED 7.5% of the time.[3] Even though the risks are different in developing TED, there is no difference in time to onset of symptoms typically seen at 18-26 months[3-4] either prior to or following a diagnosis of thyroid dysregulation. Those having TED and hyperthyroidism tended to remain more resistant to treatment, taking 49.6 months to resolution compared to only 22.7 months in hypothyroid TED.[3] The clinical signs of both hypothyroid and hyperthyroid TED are no different in terms of pain, proptosis, lid swelling, diplopia, conjunctival chemosis, corneal exposure, and neuropathy[3] therefore the relevance of requesting bloodwork may only be to treat the underlying condition rather than to classify the type of TED present as the different types pose no difference in treatment decisions.

Other Classification Systems May Show Benefit

The NOSPECS classification may be easy to use but it does carry significant limitations. Classes 1-2 incorporate both subjective and objective findings, the criteria of proptosis ≥23mm may be too high for early detection, and dryness signs due to exposure can be seen even in mild cases.[1]

Additionally it is not uncommon for classes to be skipped[5] thus complicating the prognostic value of the classification system. Therefore the VISA classification system[6] may provide more clinical relevance when deciding on severity and treatment going forward. Through this classification, the most serious manifestation of TED is listed first so that if it is present, significant treatment should be initiated.[6] It also further classifies the inflammation and congestion activity seen in TED[6] in a practical way. Grading items such as chemosis and lid edema may be more useful in describing progression from one exam to the next rather than just the presence or absence of signs. Since each level is scored more precisely, severity required to treat may be realized sooner. The VISA classification was developed in order to improve on the Clinical Activity Score[8] system for TED classification. A complete summary of the VISA classification system has been included in appendix 1 (page 47). A photographic atlas[9] has also been developed which may be useful in a research setting but is likely more detail oriented than is practical in the normal clinical setting.

Risk Factors in Developing TED

The risk factors surrounding the development of TED are still being investigated, but some current risk factors have been accepted as reasonable. Genetics, sex, smoking, type of hyperthyroid treatment, antibody titers, and age are all related to the development of TED. When looking into genetics, a history of systemic hyperthyroidism, Hashimoto's disease or the presence of autoimmune diseases in other relatives has been shown to increase an individual's risk of developing TED.[10] Women are more likely to develop TED, however men have been shown to experience the disease more severely[1,4,11] Additionally, patients that have already been diagnosed with hyperthyroidism have an increased odds ratio of 7.7 in developing TED as well as it being more severe than those that were not smoking.[4,11- 12] The type of treatment for those with

hyperthyroidism also makes a difference in that radioiodine therapy is more likely to lead to development or worsening signs of TED compared to other hyperthyroid treatment forms.[10] Even in patients with euthyroid or hypothyroid status, higher than normal antibody titers (anti-TSH receptor antibodies) increase the likelihood that they will develop TED.[4,12] The age of onset of TED also plays a role as those older than 60 years of age have a greater risk in developing TED.[1]

Treatment of TED

The initial stages of TED are generally self-limiting and require only first line symptomatic treatment such as artificial tears, ointment or lacrimal occlusion for dry eyes, elevating head resting position to reduce morning edema, encouraging smoking cessation to reduce orbital congestion, and treating the primary thyroid dysregulation if appropriate.[7] If further intervention is required, options include radiotherapy,[7] systemic glucocorticoids,[2,7] orbital decompression surgery,[2,7] selenium supplementation,[2] and Rituximab medication.[2,7] Each of these treatment forms are indicated in different circumstances. Radiotherapy aims to decrease inflammation and glycosaminoglycan production non-specifically.[7] Glucocorticoids are often pulsed with IV in the beginning and later shifted to oral administration in order to target soft tissue and optic neuropathy changes.[7] Decompression therapy is often required when significant optic nerve compression cannot be resolved through other methods[2,7] or rarely as a first line treatment[7] in order to increase the amount of space available for the tissue to occupy thereby decreasing compression and proptosis. Selenium is a trace mineral that acts as an anti-oxidant and subsequently reduces the amount of catalyst available to produce thyroid hormone.[2] Other anti-oxidants like nicotinamide and allopurinol show greater effects in reducing soft tissue inflammation especially in smokers.[7] Rituximab is a monoclonal antibody that serves to immediately deplete circulating B cells without affecting T cells and natural killer cells[7] which may lead to a promising reduction in TSHR antibody levels in retroorbital tissues.[2]

Differential Diagnoses

There are a number of diagnoses that should be considered when a patient presents with signs that may be indicative of TED: allergic conjunctivitis, myasthenia gravis, orbital myositis, chronic progressive external ophthalmoplegia, orbital tumors, carotid cavernous fistula, sarcoidosis, and preseptal/orbital cellulitis.[7] The redness and bulbar chemosis provide overlap of signs between TED and allergy, however if the VISA classification were to be followed, the extent of chemosis may be able to be differentiated as TED would be more severe as it bows past the lower lid plateau.[6] Myasthenia gravis, orbital myositis and chronic progressive external ophthalmoplegia are likely to affect the muscles primarily, however the order they are affected in TED is usually more predictable starting with the inferior rectus being involved.[4] The other differentials are best ruled out through imaging, which is required to confirm a diagnosis of thyroid eye disease[4] but may not be necessary if the diagnosis can be sufficiently determined clinically.[7]

Conclusion:

Thyroid eye disease with optic nerve head involvement is a disorder requiring aggressive therapy. Even though the stages of TED are not linear on the NOSPECS classification, early detection and monitoring of the disorder is likely to lead to more rapid initiation of appropriate management thereby decreasing the likelihood of severe, irreversible vision loss. It may also be appropriate to consider newer classification systems such as VISA that more clearly delineate severity and the level required to initiate treatment. The type of treatment considered should be selected to target the specific underlying issue whenever possible; whether it is treating the optic nerve head compression with glucocorticoids and decompression surgery, or treating soft tissue edema and inflammation with Rituximab, selenium or radiotherapy. It is also important to consider monitoring more carefully those individuals receiving therapy for hyperthyroidism that may alter the status of TED in those patients. It is prudent to never ignore a decrease in visual acuity in the absence of an explanation especially when the reason could be the result of optic nerve compression. Thyroid eye disease can be confused with more common differential diagnoses in the early stages; however careful attention to details and considering case history should lead to the appropriate diagnosis majority of the time.

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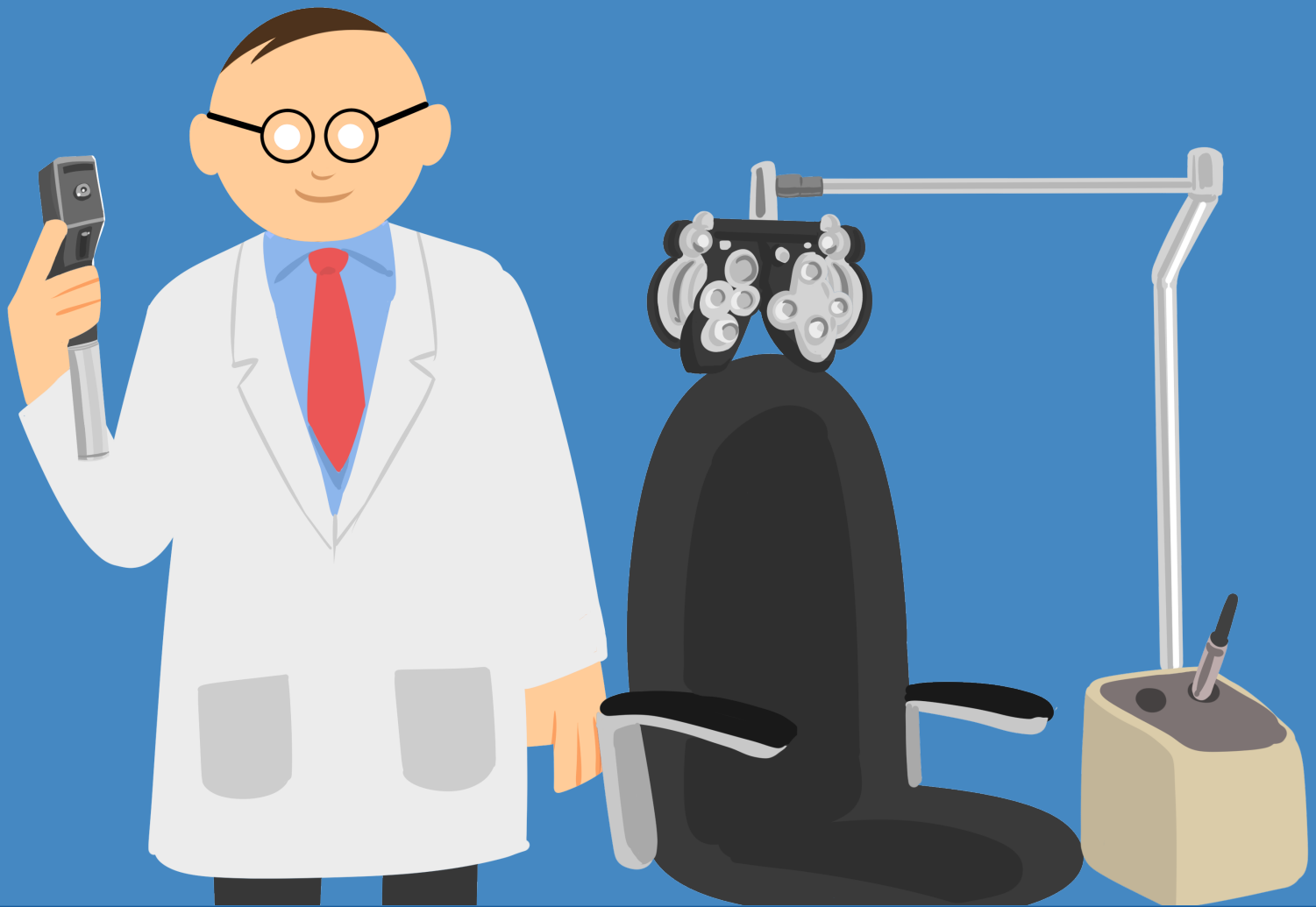

THE JOB CRUNCH

MYTH OR REALITY?

By Abraham Yuen Toronto, ON

By the time you enter your first term in optometry, you may have heard rumours of a saturated job market that await you after four grueling years of hard work. You hear that there is an oversupply of optometrists in Canada and that online exams will soon replace you. You start to question yourself if you had made the right career choice, especially with a graduating debt of over $100,000 for in-country students and $250,000 for students abroad. Before you get yourself all worked up, let's have a closer look at the facts.

Supply: Looking at the Numbers

While supply and demand varies from province to province, places such as Ontario, BC, and Quebec have all experienced a high influx of graduates. In a report commissioned in 2014, "Optometry services in Ontario: supply-and demand-side factors from 2011 to 2036", Leonard et al suggested that 77 new optometrists are needed to enter the workforce per year in the next decade to keep up with the current rate of demand. From 2021 to 2026, 87 would be needed, and 92 thereafter until 2036. However, the College of Optometrists of Ontario reported that 120 new optometrists registered in the province in 2014, well over the 77 graduates Leonard et al predicted to keep up with current demands.

Currently, the University of Waterloo enrolls 360 students and graduate 90 students each year, while the University of Montreal enrolls 184 students, producing 46 students annually. The fluctuation in supply comes from the number of Canadian students choosing to study in the US, where numbers have experienced an explosive increase. According to the Association of Schools and Colleges of Optometry (ASCO), a total of 559 Canadians were studying optometry in the US in 2015-2016, which is 181% of the number of students studying in the US in 2005-2006 (Table 1, Figure 2). A possible factor is the opening of five new US optometry schools since 2009, increasing Canadian students' attention to studying abroad. While a few US-trained Canadians choose to remain in the states after graduation, most students do return to Canada after their studies. This is especially evident out in the west, where provinces like Alberta now have more American-trained optometrists than Canadian-trained (Figure 1).

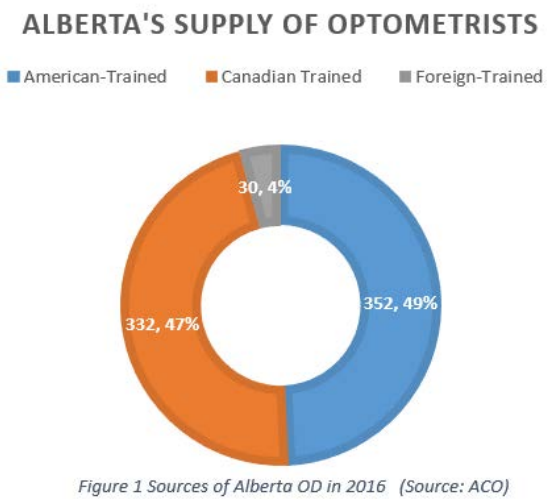

Figure 1 Sources of Alberta OD in 2016 (Source: ACO)

Regional Differences

Most of the spike in supply has focused in metropolitan areas like the Greater Toronto Area, Montreal and Vancouver. Graduates are often working multiple part time jobs to make up a full-time schedule. Yet outside the big cities, many optometrists are struggling to find an associate. Past CAOS president Jeffrey Lam, who organized CAOS Interview Day 2015 acknowledged that a majority of job postings come from outside the major metropolitan areas in places such as Antigonish, NS; Kindersley, SK; and Dryden, ON. "It was disappointing for many potential employers from these areas. Many of them were refunded from the event because they did not receive a single applicant." Lam explained. These employers often offer a full-time work schedule, with a good starting salary or remuneration for the new graduates. It may be wise for graduates to look beyond the lifestyle of the big cities to secure a full-time job.

Demand for Optometric Services

While the supply of optometry is easy to determine, demand is a lot more difficult to predict.

To quantify the US Department of Health, Education and Welfare released a report, "Review of Health Manpower Population Requirements Standards" in 1976 to assess and predict the supply and demands in different healthcare services. One way to quantify, known as the Demand/Productivity Ratio concluded that an ideal 14.1 optometrists are needed per 100,000 people in order to meet the demands for optometric services. Table 2 shows that in Ontario, there were 16.3 optometrists per 100,000 people in 2015, a number that has risen above the ideal ratio, and has substantially increased from 11.6 optometrists per 100,000 people in 2005. Since the time of the paper, many reports have since attempted to use other

Table 1: Total Number of Canadians Studying in Optometry in US by Year

03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16
232	280	309	348	392	410	414	431	432	442	531	516	559

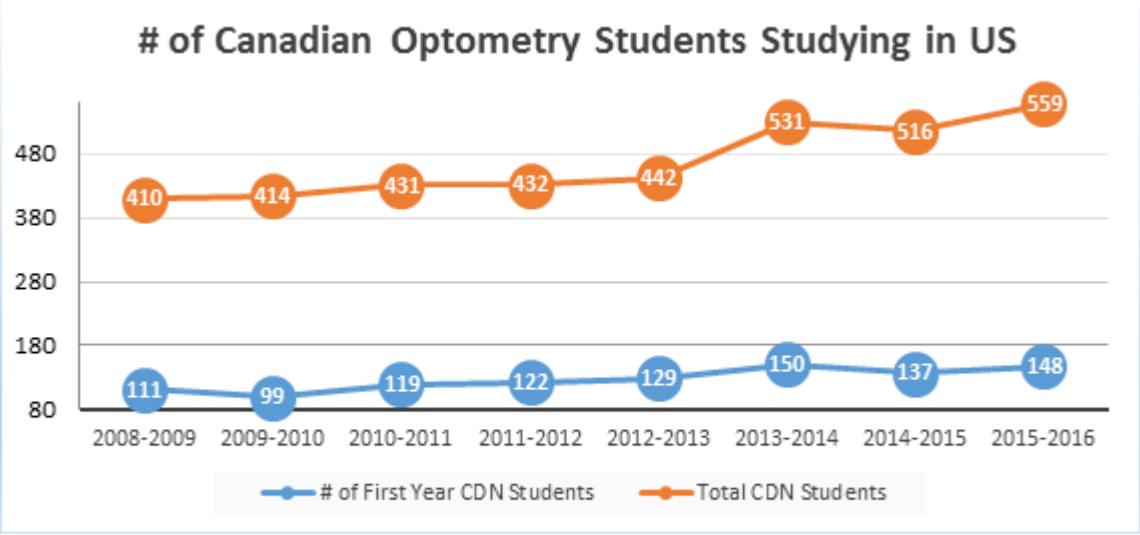

Figure 2: Number of Canadians Studying Optometry in US (2008-2016)
Source: http://www.opted.org/past-student-data-reports/

Table 2 Optometrists Growth and Population Ratios in Ontario 2005-2014

Year	Population in Ontario[1]	# of ODs	OD Growth Rate (Net increase)	New Registrations	Retirements, Resignations, Deaths	Population/OD Ratio	OD/100,000 Ratio
2005	12,445 900	**1445**	--	**62**	30	8613	**11.61**
2006	12,586 800 (+1.1%)	**1505**	+4.2% (+60)	**75**	16	8363	**11.95**
2007	12,717 100 (+1.0%)	**1560**	+3.7% (+55)	**83**	15	8152	**12.26**
2008	12,851 900 (+1.1%)	**1631**	+4.6% (+71)	**90**	13	7880	**12.69**
2009	12,990 800 (1.1%)	**1733**	+6.3% (+102)	**119**	15	7496	**13.34**
2010	13,135 100 (1.1%)	**1826**	+5.4% (+93)	**123**	28	7193	**13.90**
2011	13,263 500 (+0.9%)	**1939**	+6.2% (+113)	**143**	28	6840	**14.62**
2012	13,410 100 (+1.1%)	**2047**	+5.6% (+108)	**133**	23	6551	**15.26**
2013	13,550 900 (+1.0%)	**2110**	+3.1% (+63)	**94**	29	6422	**15.57**
2014	13,678 740 (+0.9%)	**2187**	+3.6% (+77)	**120**	36	6254	**15.99**
2015	13,797 000 (+0.9%)	**2243**	+2.6% (+56)	**95**	34	6151	**16.26**

Table 3 Number of Optometrists in Canada in 2015/2016

British Columbia	Alberta	Saskatchewan	Manitoba	Ontario
704	696	180	165	2243
Quebec	**New Brunswick**	**Nova Scotia**	**Prince Edward Island**	**Newfoundland**
1635	118	132	20	61

Total Optometrists in Canada: 595

statistical methods to evaluate supply and demand that are beyond the scope of this article.

Besides statistics, we can also look at some factors that may affect the demand of optometric services:

With an aging population, there is a clear need for optometric care. In the 2015 CNIB Vision Health Report, an "estimated 5.6 million Canadians have a vision-threatening eye disease." Optometrists will need to look after a rise in ocular conditions like macular degeneration, cataracts, glaucoma and diabetic retinopathy. While 69% of Ontarians identified vision loss as their most feared disability, only 4 in 10 seniors over 65 and 1 in 10 children ages 4-14 have received a regular eye exam. There is a big potential for public education and for optometrists to play a larger role in meeting the vision care needs of patients in Canada.

Meanwhile, optometry is rapidly expanding its scope of practice south of our border, with Kentucky, Oklahoma, and Louisiana optometrists permitted to perform minor laser procedures such as LPIs, YAGs, and SLTs. Many states have passed laws as well to permit the administration of injections and prescribing oral steroids. Students coming back from the US are ready to practice full-scope optometry and

know that they have a greater potential to provide the best care to their patients. Closer to home, Alberta approved an expansion in scope in 2015 that permitted optometrists to manage and treat glaucoma independently, order and interpret laboratory tests, order X-Rays and ultrasounds, and prescribe schedule 1 drugs. In 2016, Saskatchewan also allowed the independent treatment and management of glaucoma, and prescribing oral medications.

With an aging population with increased morbidity, expanding our scope will not only increase the role and demand for optometrists, but help our healthcare system be more efficient and meet the healthcare needs of patients. Thus, it is imperative for each of us to partake in our provincial and national associations and advocate for changes.

Future of Optometry: Seeing Beyond 2020

While the numbers show that there are many practising optometry and many more of us yet to graduate in Canada and the US, it is up to each of us to be willing to adapt or risk becoming irrelevant in a changing world. In the age of mobile convenience, optometrists face increasing competition from internet dispensing giants such as 1-800 Contacts and Clearly. Online sight-testing and prescription renewal apps such as Opternative or Simple Contacts —though illegal in most places, continue to be disruptive technologies, vying to be the next "Uber." Optometrists must differentiate their practices and prove to patients the value of in-person care and importance of comprehensive eye health exams to remain relevant. Opportunely, optometrists are beginning to find their niche, choosing to distinguish their clinic in an area of focus. Clinics are emphasizing their practice on areas of interest such as sports vision, binocular vision, low vision, specialty contacts, ocular nutrition, myopia control, and much more.

Clinics like the Alberta Sports Vision Institute and EyeLabs Dry Eye Clinic in Brampton are leading the way in a new frontier of niche practice. Vision rehabilitation and vision therapy has grown so rapidly in Canada that a group of optometrists established the Canadian Optometrists in Vision Therapy and Rehabilitation (COVT&R) in 2014 for like-minded clinicians to share and grow their knowledge of VT together.

While there are certainly many challenges ahead for our profession, it is up to practising optometrists and optometry students to continue to strive and push boundaries, and be innovators in our industry. We can look through the glass half full or look through the glass half empty. We, as a profession must have the foresight to pursue new opportunities and respond to challenges in the world of vision care. If we set ourselves into complacency and stay the same, our failure to have the foresight to see beyond 2020 in our industry may lead to our own demise. By then, as we all know— hindsight is 20/20.

Wondering about the **scope of practice in your province?**

Check out the CAOS Map:
www.caostudents.ca/map

FUTURE OF EYE CARE IN THE WORLD OF AUTOMATION

Words by Ali Khan

With the advancement of technology, smart phones, iPads and many other smart gadgets, the entire landscape of our day to day services is changing rapidly. Major online retailers such as Google, Amazon and others have started retailing shoes, clothes, almost anything under the sun which is non-perishable. Every day new "Apps" are developed. Your smart phone can now handle all your day to day financial transactions and hopes to replace the wallet you have so carefully carried over years.

In the Eye Care, Apps have been developed where by one can do a self-refraction and determine an objective Rx for their visual deficiencies (with many limitations of course). Over the last decade some major companies decided to by-pass the brick and mortar professional Optometry clinics or Optical stores to start selling contact lenses on line and claim substantial savings for the consumer. Whether the saving and the advantages touted are real or perceived is debatable. The real crush came when one Vancouver based company decided to sell glasses on line. In British Columbia, the influence of this company was so strong that the Minister of Health changed the regulations where by Optical dispensing of glasses was deregulated for Opticians and due to automated sight testing technology, Opticians were now permitted to perform refractions in their offices. For Optometrists, it became mandatory to record PD of the patient on every prescription they prescribe. A radical change indeed.

Before we discuss further, let us see the landscape of the Eye Care Industry as a whole. The hard core retail Optical industry is dominated by large and small chains. 85 % of the licensed Opticians are employed in some capacity of the other with these chains. 10 to 12 % Opticians are self-employed. Most of Optometrists are independent and self-employed due to the nature of the statutes under which they are regulated. Under the federal governments' initiative, the licenses have almost become mobile. One can be licensed in a particular province to start with and can easily relocate in the other provinces of his or her choice.

Almost all provinces have the expanded scope of practice for Optometrists wherein they can prescribe therapeutic Pharmaceutical agents. This catapults the Optometrists to be the gate keeper of the non-surgical, total primary eye care from ocular disease management to spectacle and Vision Therapy and a unique privilege of being able to offer retail dispensing of eye glasses and contact lenses in their practice. As students of Optometrists, all your hard work will pay off to a very respectable and financially rewarding professional career where you choice are unlimited.

Delisting of eye exams in a certain age bracket, allows you to work outside of the government controlled Health Plans and charge your own professional fees based upon the services provided.

Under the revised regulations, Opticians can now work with Optometrists and even partnership arrangements under strict guidelines are permitted. This move has brought the utopian dream of collaboration between three ECPs into a reality mode and C-Sehp strongly believes in this collaboration. This will lead to a very high standard of eye care for the Canadians, young or old alike.

As for encroachment of technology and on line dispensing, I predict that this fad will fade within the next 5 years. Already the numbers of such vendors are dwindling. Studies have shown that more than 50 % of glasses fabricated and dispensed by the online companies are in accurate or wrong. Physical fitting of frames is a matter of luck and in most cases, frames do not fit and God knows now many contact lens related complications go unreported or treated.

Welcome to the wold of eye care. The future is great and the profession is still evolving. C-Sehp and AOE are there to serve you. As a student, it cost you nothing. Become a member of C-Sehp. Register your contact info with AOE and we have exciting plans for the entire profession and in particular for the new graduates who will be entering the field.

Regards,
Ali

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How to market your way to the career you want

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Thyroid Eye Disease Progression to Optic Nerve Involvement

Appendix 1: The VISA classification system7 has been summarized below with information taken from the International Thyroid Eye Disease Society's website:

V – Vision loss (optic neuropathy)
This can be detected through loss of central visual acuity, colour vision defects, afferent pupil defects, pallor of optic nerve, or loss of peripheral vision. Testing used to confirm optic neuropathy includes CT/MRI, visual fields, VEP and fundus photography.
Classification at this level is determined as present or absent where the former indicates immediate treatment is required.

I – Inflammation
This section is divided into specific grading areas for chemosis, edema, and pain as updated from the Clinical Activity Scoring System. Each grade represents a point. Additional points are given for the presence of other indicated signs.

Measured Sign	Grade 0	Grade 1	Grade 2
Chemosis	No orbital chemosis present	Conjunctival chemosis not extending past the lower lid plateau	Conjunctival chemosis extending past the lower lid plateau
Lid Edema	No lid edema present	Lid edema present without the appearance of a festoon	Lid edema present with the appearance of a festoon
Pain	No ocular pain present	Eye pain only present with motility	Eye pain present at rest

Other indication signs (1 point each additional if present):
- Redness of the eyelids
- Diffuse conjunctival redness covering at least on quadrant
- Swollen caruncle
- Increased proptosis >2mm within 3 months

The accumulation of points greater than 4/10 in the inflammation category indicates more aggressive intervention should be initiated.

S – Strabismus/motility
Detection is often through diplopia (in primary position or gaze specific) and is classified using ocular ductions or prism cover testing to determine the degree of restriction to motility. Management is dependent on stability and severity.

A – Appearance/exposure
These signs are detected by the patient as bulging of eyes, eyelid retraction, foreign body sensation, glare, dryness and secondary tearing. Objectively eyelid retraction can be measured, exophthalmometry can provide a measure of proptosis, and photographs can document the appearance of changes. Management in the appearance category is dependent upon the inflammatory score described previously but may include artificial tears, tarsorrhphy, lid lowering or elevation surgery, or even orbital decompression surgery.

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