

CJO|R|CO

CANADIAN JOURNAL OF OPTOMETRY | REVUE CANADIENNE D'OPTOMÉTRIE



VOL 75 NO 4 | 2013

Visual Status of First Nations Children The Sagamok First Nation Vision Care Project



COETF ANNUAL REPORT | REACHING NEW HEIGHTS AT THE AAO MEETING IN SEATTLE
CHECKLIST FOR OPTOMETRY | EYE CARE MISSION IN PERU
VALSALVA RETINOPATHY IN THE THIRD TRIMESTER OF PREGNANCY

Richness is:

Helping people see
the world more
clearly.

You define richness. With the *Scotia Professional*® Plan, we can help with the money part. You've worked long and hard to build your career. It only makes sense to do everything you can to ensure your continued success, both professionally and personally. The Professional Plan is a fully customized banking package designed to help you build a strong, profitable business while ensuring your personal finances receive the attention they deserve. And that will help you focus more clearly on what you do for others.

To learn more about *Scotia Professional Plan*, visit your nearest Scotiabank branch or visit scotiabank.com/professional today.

Scotia Professional Plan

You're richer
than you think.®





The Canadian Journal of Optometry is the official publication of the Canadian Association of Optometrists (CAO) / La Revue canadienne d'optométrie est la publication officielle de l'Association canadienne des optométristes (ACO) : 234 Argyle Avenue, Ottawa, ON, K2P 1B9. Phone 613 235-7924 / 888 263-4676, fax 613 235-2025, e-mail info@opto.ca, website www.opto.ca. Publications Mail Registration No. 558206 / Envoi de publication - Enregistrement no. 558206.
The Canadian Journal of Optometry / La Revue canadienne d'optométrie (USPS#0009-364) is published four times per year at CDN\$55, and CDN\$65 for subscriptions outside of Canada. Address changes should be sent to CAO, 234 Argyle Avenue, Ottawa, ON K2P 1B9.

The CJO/RCO is the official publication of the CAO. However, opinions and commentaries published in the CJO/RCO are not necessarily either the official opinion or policy of CAO unless specifically identified as such. Because legislation varies from province to province, CAO advises optometrists to consult with their provincial licensing authority before following any of the practice management advice offered in CJO/RCO.
The CJO/RCO welcomes new advertisers. In keeping with our goal of advancing awareness, education and professionalism of members of the CAO, any and all advertising may be submitted, prior to its publication, for review by the National Publications Committee of the CAO. CAO reserves the right to accept or reject any advertisement submitted for placement in the CJO/RCO.

La CJO/RCO est la publication officielle de l'ACO. Les avis et les commentaires publiés dans la CJO/RCO ne représentent toutefois pas nécessairement la position ou la politique officielle de l'ACO, à moins qu'il en soit précisé ainsi. Étant donné que les lois sont différentes d'une province à l'autre, l'ACO conseille aux optométristes de vérifier avec l'organisme provincial compétent qui les habilite avant de se conformer aux conseils de la CJO/RCO sur la gestion de leurs activités.

La CJO/RCO est prête à accueillir de nouveaux annonceurs. Dans l'esprit de l'objectif de la CJO/RCO visant à favoriser la sensibilisation, la formation et le professionnalisme des membres de l'ACO, on pourra soumettre tout matériel publicitaire avant publication pour examen par le Comité national des publications de l'ACO. L'ACO se réserve le droit d'accepter ou de refuser toute publicité dont on a demandé l'insertion dans la CJO/RCO.

Editor in Chief / l'éditeur en chef :
Dr B. Ralph Chou

Chair, National Publications Committee /
Président, Comité national des publications : Dr Paul Geneau

Academic Editors / Rédacteurs académiques :
University of Waterloo, Dr B. Ralph Chou
Université de Montréal, Dr Claude Giasson

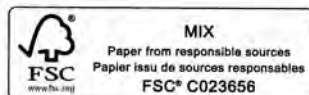
Managing Editor / Rédactrice administrative :
Advertising Coordinator / Coordonnatrice des publicités :
Design/Layout/Copy-editing: Leslie Laskarin

Copy-editing: Catherine Heinmeller

Printing Consultant / Impression : General Printers

Traduction / Translation :
Tessier Translations / Les Traductions Tessier

Révisseurs, version française / Copy Editors (French):
Claudette Gagnon



President's Podium / Mot du président

By/par Dr. Paul Geneau 3

Members' News / Nouvelles pour les membres 4

Guest Article | Take Action to Ensure Client Loyalty

By Pauline Blachford 14

The COETF Annual Awards Program for 2013 16

Practice Management | Pratique et gestion

Checklists for Optometry | Les listes de contrôle en optométrie

By Dr. Gerry Leinweber 21

Teaming up for Humanity – Eyecare Mission in Peru

By Zoé Lacroix 24

Reaching New Heights at the AAO in Seattle, WA

By Dr. Eddy Bitton & Dr. Kristine Dalton 27

Visual Status of First Nations Children: The Sagamok First Nation Vision Care Project

By Dr. Catherine A Chiarelli, & Dr. A. Paul Chris 35

Valsalva Retinopathy in the Third Trimester of Pregnancy

By Derek MacDonald 43

Uniform requirements for manuscripts: contact CAO.

Exigences uniformes pour les manuscrits : contacter l'ACO.

COVER IMAGE: Fred Cattroll

CAO Members' Website - opto.ca

Forgot your password? Please contact info@opto.ca

Site Web pour les membres de l'ACO - opto.ca

Mot de passe oublié? Veuillez contacter info@opto.ca

THANK YOU FOR YOUR SUPPORT
EYE HEALTH COUNCIL OF CANADA
PARTNERS 2013

GOLD

Johnson & Johnson
Vision Care

A DIVISION OF JOHNSON & JOHNSON, INC.

SILVER

Alcon®

Centennial
keeping you in sight


ESSILOR

HOYA

LUXOTICA
GROUP

BRONZE

BAUSCH+LOMB


Nikon

Transitions®


CooperVision™

 **Scotiabank®**

ZEISS

BY / PAR DR. PAUL GENEAU, OD

Leading up to assuming the presidency in July, and in the subsequent months, I have been asked numerous times what my personal goal is to achieve during my term. My style is to be a consensus builder, and as leader of our team I want to ensure that we are all pulling in the same direction. As a profession, we are too small a group to allow ourselves to be seriously divided. That is why I am very pleased that we have completed a strategic planning process, observing the priorities expressed by our members, and identifying goals that will enable the CAO to best serve our members. My goal is to facilitate the CAO's ability to manifest our strategic plan, through good governance, effective financial and administrative management, and productive relationships, both internal and external to our profession.

We had a very strong response to our members' survey from individual optometrists as well as provincial associations. It identified five highly consistent priorities:

1. Educate government
2. Educate the public
3. Unregulated internet sales
4. Sight testing
5. Children's vision

The participants in the strategic planning process kept those priorities in mind in their deliberations. They identified five goals to work towards over the next three years:

1. To be the voice of doctors of optometry on federal vision care issues.
2. To support doctors of optometry nationwide in practicing successfully through working in conjunction with the provincial associations.
3. To facilitate dialogue about the future of the profession.
4. To provide support for students as they prepare to enter the workforce.
5. To manage an effective and efficient organization that enables high performance.

Like a budget, a strategic plan is a living document, guiding our work, but not tying our hands. We will adapt and adjust as needed as we go along.

For their contributions, I would like to offer many thanks to our council members, our new Executive Director Laurie Clement, Marcel Brin: from OSI, recently graduated optometrists Drs. Justine Fung and Vick Chan, student association presidents Zoe Lacroix (University of Montreal) and Raj Mistry (University of Waterloo), president of NLAO Dr. Mark Smith, and facilitator Dr. Jane Cooke-Lauder.

Au cours des mois qui ont précédé mon arrivée à la présidence en juillet et de ceux qui l'ont suivie, on m'a demandé à maintes reprises de préciser mon objectif personnel au cours de mon mandat. Mon style consiste à dégager des consensus et comme chef de file de notre équipe, je vous garantis que nous poussons tous dans la même direction. Comme profession, nous sommes beaucoup trop peu nombreux pour nous prêter à toute scission grave. C'est pourquoi je suis très heureux que nous ayons terminé un exercice de planification stratégique qui a consisté à analyser les priorités exprimées par nos membres et à définir des buts qui permettront à l'ACO de mieux les servir. Mon but consiste à faciliter la capacité de l'ACO à réaliser notre plan stratégique par la bonne gouvernance, la gestion financière et administrative efficace, ainsi que des relations productives tant à l'intérieur de la profession qu'à l'extérieur de celle-ci.

Notre sondage des membres a suscité une réponse très solide, autant d'optométristes en particulier que d'associations provinciales. Il a dégagé cinq priorités très constantes :

1. Informer le gouvernement
2. Informer le public
3. Ventées non réglementées sur Internet
4. Examen de la vue
5. Vision des enfants

Les participants à l'exercice de planification stratégique ont songé à ces priorités au cours de leurs délibérations. Ils ont dégagé cinq buts vers lesquels tendre au cours des trois prochaines années :

1. Être la voix des docteurs en optométrie au sujet des enjeux fédéraux des soins de la vue.
2. Aider les docteurs en optométrie du Canada à pratiquer avec succès en collaborant avec les associations provinciales.
3. Faciliter le dialogue au sujet de l'avenir de la profession.
4. Aider les étudiants qui se préparent à entrer dans la population active.
5. Gérer une organisation efficace et efficiente qui permet un rendement élevé.

Comme un budget, un plan stratégique est un document vivant qui guide notre travail sans toutefois nous menotter. Nous nous adapterons et nous nous ajusterons au besoin en cours de route.

Je remercie mille fois de leurs contributions les membres de notre conseil, notre nouvelle directrice générale, Laurie Clement, Marcel Brin d'OSI, les Drs Justine Fung et Vick Chan qui ont reçu récemment leur diplôme d'optométriste, les présidents des associations d'étudiants Zoe Lacroix (Université de Montréal) et Raj Mistry (Université de Waterloo), le président de la NLAO, le Dr Mark Smith, et la Dre Jane Cooke-Lauder, animatrice.

APPOINTMENTS AND AWARDS NOMINATIONS ET DISTINCTIONS

Berkeley Appointment of Dr. John Flanagan

The University of California, Berkeley, has announced the appointment of Professor John Flanagan as the 8th Dean of its School of Optometry, beginning June 1, 2014. Dr. Flanagan, and his wife Dr. Kathy Dumbleton, have been working at the University of Waterloo, School of Optometry and Vision Science for over 25 years, and have given their skills and knowledge for the benefit of our patients and students. Both have been very helpful as advisers to CAO and lecturers at the CAO Biennial Congress. Congratulations to Dr. Flanagan for this prestigious appointment. Best of luck John and Kathy!

Nomination d'un professeur à Berkeley

L'Université de la Californie à Berkeley a annoncé la nomination du Pr John Flanagan comme 8^e doyen de son École d'optométrie, à compter du 1^{er} juin 2014. Le Dr Flanagan et son épouse, la Dre Kathy Dumbleton, travaillent à l'École d'optométrie et des sciences de la vision de l'Université de Waterloo depuis plus de 25 ans et ont fait profiter les patients et les étudiants de leurs connaissances générales et spécialisées. Tous deux ont été très utiles pour l'ACO et comme conférenciers au Congrès biennal de l'ACO. Nous félicitons le Dr Flanagan de cette nomination prestigieuse. La meilleure des chances à John et Kathy!

CJORCO



VIEW THE DIGITAL VERSION AT: OPTO.CA
SEND SUBMISSIONS AND ENQUIRIES
TO: CJO@OPTO.CA

The Canadian Journal of Optometry and Council of the Canadian Association of Optometrists would like to warmly thank both **Dr. Ralph Chou**, Editor-in Chief, (*School of Optometry and Vision Science, University of Waterloo*), and **Dr. Claude Giasson**, Academic Editor, (*École d'optométrie, Université de Montréal*), for their wonderful help editing, advising and coordinating to ensure that the academic papers meet requirements for publication.



Dr. Ralph Chou, Editor-in Chief



Dr. Claude Giasson, Academic Editor

Peer Review

The CJO editorial team are also very grateful to the following, who have given freely of their time and talents to review the scientific papers published in the CJO, over the past three years:

Etty Bitton, OD, MSc
Léo Breton, OD
Danielle de Guise, OD, MSc
Vasile Diaconu, PhD
Jean-Sébastien Dufour, OD, MSc
Mark Eltis, OD
Nicolas Fontaine, OD, MSc
Pierre Forcier, OD, MSc
Jacques Gresset, OD, PhD
Jean-Marie Hanssens, OD, MSc
Shelly L. Hook, OD
Julie Laurin, OD
Sarah MacIver, OD
Olga Overbury, PhD
Judith Renaud, OD, MSc
Yvon Rhéaume, OD
Barbara E. Robinson, OD, PhD
Patrick Simard, OD, MSc
Benoît Tousignant, OD, MSc
Timothy H. Tsang, OD
Marie-Chantal Wanet, PhD



VARILUX[®] series

Limitless Vision

A revolution in progressive lenses:

- Reflex vision: by respecting the dominant eye's leading role, 4D Technology improves the reaction time
- Stability of vision in motion: swim effect reduced up to 90%
- Wide angle vision: fields of vision up to 50% wider



CRIZAL PREVENCIA OFFERS COMPLETE EYE HEALTH PROTECTION OUTDOORS AND INDOORS FOR CLEAR VISION AND LONG-TERM EYE HEALTH

CRIZAL PREVENCIA NO-GLARE LENSES BENEFIT FROM SELECTIVE LIGHT FILTER AR TECHNOLOGY TO PROTECT YOUR PATIENTS' EYES FOR TOMORROW, STARTING TODAY.

- The result of 20 years of R&D in selective light filtration
- 4 years of partnership with the Paris Vision Institute in the "Eye health defense" research program lead to a **breakthrough discovery** locating the precise light wavelengths which are the most harmful to retinal cells: **Blue-Violet Light (415-455 nm)**.



1 FILTERS OUT HARMFUL LIGHT TO PREVENT PREMATURE AGING OF THE EYE



- Reduces retinal cell⁽¹⁾ death by 25% by filtering 20% Blue-Violet Light



- Protects from UV rays 25 times more⁽²⁾ than the naked eyes by virtually eliminating UV rays reflected into the eye from the backside of the lens, providing the most complete UV protection on a clear lens

2 ALLOWS ESSENTIAL VISIBLE LIGHT TO PASS THROUGH TO MAINTAIN VISION AND OVERALL WELL-BEING

- Preserves maximum transmission of visible light including Blue-turquoise, important to the pupillary constriction reflex and the synchronization of the human biological clock

3 ENSURES ENDURING CLARITY OF VISION AND TRANSPARENCY FOR OPTIMAL VISION AT ALL TIMES

- Offers the most complete protection against the enemies of clear vision



Glare

Scratches

Smudges

Dust

Water

CRIZAL PREVENCIA OFFERS EYE HEALTH PROTECTION OUTDOORS AND INDOORS FOR EVERYONE, WHETHER THEY WEAR CORRECTIVE LENSES OR NOT.

There are many other ways to protect your patients' eyes against fog, UV and sun with Crizal.

(1) The Blue-Violet Light cut may slightly differ depending on lens material.
(2) A new index developed by Essilor, endorsed by independent 3rd-party, certifying the global UV protection of a lens. E-SPF 25 for Crizal Previncia lenses, except with Orma clear (E-SPF 10).
Lens performance only: The E-SPF excludes direct eye exposure that depends on external factors (wearer's morphology, frame shape, position of wear). More information on crizal.ca



DOC Collateral

Is your office using the new print collateral from the Doctors of Optometry Canada campaign? Do you know that you may order additional supplies from the DOC website? Do you know that you may order a wall case to display the DOC collateral? To inspire you further, watch the youtube video posted by Dr. Jeff Goodhew, co-chair, National Public Education Committee. Displaying your DOC collateral takes no time at all!! Visit the DOC website, login to the member section and click on the collateral link.

Documents accessoires pour la campagne DOC

Votre bureau utilise-t-il les nouveaux documents accessoires issus de la campagne Docteurs en optométrie Canada? Savez-vous que vous pouvez en commander des stocks supplémentaires à partir du site Web de la campagne? Savez-vous que vous pouvez commander un présentoir mural pour afficher les documents accessoires? Pour vous inspirer davantage, regardez la vidéo youtube affichée par le Dr Jeff Goodhew, co-président du Comité national d'éducation publique. L'affichage de vos documents accessoires de la campagne DOC se fait rapidement!! Visitez le site Web DOC, entrez dans la section membres et cliquez sur le lien vers le document.

Canada Anti-Spam Legislation

The Government of Canada passed its Anti-Spam legislation in 2010 and it is expected to come into force early in 2014 once the regulations have been finalized. This new anti-spam law will impact every business in Canada (including optometric practices) that sends electronic messages to promote products or services. The law is designed to prohibit the sending of commercial electronic messages (CEMs) (i.e. messages sent via email, video, Facebook, Twitter) to recipients who have not consented to being sent such messages.

While there is likely to be a grandfathering period (i.e. 2 years) to comply with

the new legislation, it is advisable that businesses begin adjusting their practices now aimed at obtaining the permission necessary to send electronic messages and simple opting out provisions. In some instances, newsletter service providers will provide the tools necessary to comply.

For further information, see www.fightspam.gc.ca or contact your newsletter service provider. Dana Cooper at the CAO office dcooper@opto.ca will also assist you in understanding the legislation.

Législation anti-pourriel du Canada

Le gouvernement du Canada a adopté en 2010 sa législation antipourriel qui devrait entrer en vigueur au début de 2014, lorsque le règlement sera terminé. Cette nouvelle mesure antipourriel aura des répercussions sur toutes les entreprises du Canada (y compris les cabinets d'optométrie) qui envoient des messages électroniques pour promouvoir des produits ou des services. La loi vise à interdire l'envoi de messages électroniques commerciaux (MEC) (c.à.d. les messages envoyés par courriel, vidéo, Facebook ou Twitter) à des destinataires qui n'ont pas consenti à les recevoir.

Il y aura probablement une période de transition (c.à.d. deux ans) pour se conformer à la nouvelle mesure législative, mais il est recommandé aux entreprises de commencer à ajuster leurs pratiques qui visent actuellement à obtenir l'autorisation nécessaire d'envoyer des messages électroniques et de prévoir des mesures simples de désengagement. Dans certains cas, des fournisseurs de services de bulletin fourniront les outils nécessaires à la conformité.

Pour en savoir davantage, consultez fightspam.gc.ca/eic/site/030.nsf/fra/accueil ou communiquez avec votre fournisseur de services de bulletin. Dana Cooper au bureau de l'ACO, dcooper@opto.ca, vous aidera aussi à comprendre la loi.

Diabetes Committee – Diabetes Reporting

In August, the Diabetes committee sent out a questionnaire to members asking about their method of reporting diabetic eye exam information back to physicians or their diabetes health team. Of those, 50% reported that they have their own form, and 25% use the form on the CAO web site. Often, we hope and assume that the patient may be telling their physician that they are receiving their diabetic eye health care from our offices. However, because patients with diabetes undergo many appointments with various health professionals, this questionnaire may get lost in the sea of information. That is why it is important for all doctors to have some reporting system that involves the team of professionals involved in the diabetic's health care. Sometimes it is not the physician involved alone, but nurse practitioners, pharmacists, internal medicine specialist, & dieticians. Whether it's your own internal report form, or the form available on the CAO website, by reporting your exam results, you not only increase your visibility in the community, but also that of optometry's role as the primary eye care provider. To obtain a Diabetes Eye Examination Report Form, log in to the members site at opto.ca and go to: <http://opto.ca/media/committees-admin/cao-committees/diabetes/pdfs/diabetic-patient-evaluation-interactive.pdf>

Comité du diabète - Déclaration du diabète

En août, le Comité du diabète a envoyé aux membres un questionnaire pour leur demander comment ils déclarent les renseignements réunis à la suite de l'examen des yeux de personnes diabétiques aux médecins ou à leur équipe de santé du diabète. Cinquante pour cent des répondants ont signalé avoir leur propre formulaire et 25 % utilisent celui qui se trouve sur le site Web de l'ACO. Souvent,

nous espérons et supposons que le patient dit à son médecin qu'il reçoit de nos bureaux ses soins de santé oculovisuelle sur le plan du diabète. Comme les patients qui ont le diabète ont de nombreux rendez-vous avec divers professionnels de la santé, il se peut toutefois que le questionnaire se perde dans l'avalanche d'information. Voilà pourquoi il importe pour tous les docteurs en optométrie d'avoir un système de déclaration qui met à contribution l'équipe de professionnels participant aux soins de santé de la personne diabétique. Parfois, ce n'est pas seulement le médecin en cause : il y a aussi des infirmières praticiennes, des pharmaciens, un spécialiste en médecine interne et des diététistes. Qu'il s'agisse de votre propre rapport interne ou du formulaire affiché sur le site Web de l'ACO, en signalant vos résultats d'examen, vous ne faites pas seulement acquérir davantage de visibilité dans la communauté : vous illustrez aussi le rôle de l'optométriste comme principal fournisseur de soins oculovisuels. Pour obtenir un formulaire de rapport d'examen oculovisuel de personne diabétique, rendez-vous au site des membres à opto.ca et à : <http://opto.ca/media/committees-admin/cao-committees/diabetes/pdfs/evaluation-du-patient-diabetique-interactif.pdf>

OD Forum

The Canadian Optometry Group (COG) is a free email-based and commercially-independent forum restricted to Canadian optometrists and optometric educators. The COG instantly shares email posted to subscribers by other subscribers. This simple and effective resource currently allows Canadian Doctors of Optometry to communicate anything relevant to optometric practice – clinical questions, eye-care news, practice management tips, etc. It is a forum for optometrists organized and operated by two Canadian optometrists. To join, please send a request to: canadianoptometrygroup@gmail.com

Forum des DO

Le Canadian Optometry Group (COG) est un forum électronique et indépendant sur le plan commercial qui est réservé aux optométristes et aux éducateurs en optométrie. Le COG diffuse des messages électroniques aux abonnés affichés par d'autres abonnés. Cette ressource simple et efficace permet actuellement à des docteurs en optométrie canadiens de diffuser tout ce qui est important pour la pratique de l'optométrie - questions cliniques, nouvelles sur les soins oculovisuels, conseils sur la gestion d'un cabinet, etc. Ce forum qui s'adresse aux optométristes est organisé et administré par deux optométristes canadiens. Pour y adhérer, veuillez faire parvenir une demande à: canadianoptometrygroup@gmail.com

WCO Curriculum Support Document Available to Download

The World Council of Optometry (WCO) has published its first ever curriculum support document which is now available on the WCO website. The resource was produced by the WCO education committee to help schools, colleges and universities intending to start or upgrade an optometry program and can be used as a basis for designing their curriculum. Fifteen elements of practice are covered in the guide including: the patient examination, patient management, general health assessment, specialized care, and professional responsibilities. The promotion of high standards of education and practice by optometrists is one of the WCO's objectives. The curriculum document is available at: www.worldoptometry.org/en/publications/curricular-support-elements-for-an-optometry-programme.cfm

Document d'appui du cursus du CMO prêt à télécharger

Le Conseil mondial de l'optométrie (CMO) a publié son premier document d'appui du cursus qui est maintenant disponible sur son site Web. Le comité de l'éducation du CMO a produit la ressource pour aider les écoles, les collèges et les universités qui ont l'intention de lancer ou de mettre à niveau un programme d'optométrie. Le document, qui peut servir de point de départ pour la conception de leur cursus, couvre 15 éléments de la pratique, y compris l'examen et la prise en charge du patient, l'évaluation de l'état de santé général, les soins spécialisés et les responsabilités professionnelles. La promotion de normes rigoureuses d'éducation et de pratique par les optométristes constitue un des objectifs du CMO. Le document sur le cursus est disponible à : www.worldoptometry.org/en/publications/curricular-support-elements-for-an-optometry-programme.cfm

NIHB Problems – Request for Feedback

The Non Insured Health Benefits (NIHB) program operated by Health Canada provides coverage to Inuit and First Nations peoples for health benefits that are medically necessary and for which the clients are not entitled through other plans and programs. Because the NIHB is a payer of 'last resort', all benefits require prior approval by a NIHB regional office.

Recently CAO has received a number of complaints regarding long waits to obtain pre-approvals. Additionally, centralization of payment systems by Health Canada has resulted in batch payments to optometrists for services provided to NIHB clients and pre-approved by NIHB. These payments do not delineate the patient or provide any information to help reconcile payments with the invoices.

CAO has discussed the problem with members, particularly in Ontario. We want to learn the scope of this problem and to hear from others that have experienced similar or other problems in dealings with NIHB. Please contact Dana Cooper at dcooper@opto.ca at the CAO office with any information.

Problèmes relatifs aux SSNA – Demande de commentaires

Les services de santé non assurés (SSNA) offerts par Santé Canada couvrent les peuples inuits et des Premières Nations en leur garantissant des services de santé médicalement nécessaires et auxquels les clients n'ont pas droit dans le cadre d'autres régimes et programmes. Comme les SSNA sont payeurs « de dernier

recours », les bénéfices doivent tous être approuvés au préalable par un bureau régional.

L'ACO a reçu récemment des plaintes au sujet de la longueur des périodes pendant lesquelles il faut attendre pour obtenir les approbations préalables. En outre, la centralisation des systèmes de paiement par Santé Canada a produit des paiements par lots aux optométristes pour services fournis à des clients des SSNA et approuvés au préalable par le ministère. Ces paiements ne définissent pas le patient et ne fournissent pas non plus de renseignements pour aider à rapprocher les paiements des factures.

L'ACO a discuté du problème avec des membres, surtout en Ontario. Nous voulons cerner l'envergure du problème et entendre d'autres membres qui ont connu des problèmes semblables ou autres face

aux SSNA. Veuillez faire parvenir tout renseignement à Dana Cooper, à dcooper@opto.ca, au bureau de l'ACO.

Veterans Affairs Canada benefit grid changes

Veterans Affairs Canada (VAC) recently revised the Benefit Grid for Program of Choice (POC) 14 – Vision (Eye) Care. The revisions include a new benefit code, dollar limit and prescriber changes effective October 1, 2013. It should be noted that 'Optometrist' has been added to the prescribers for several existing codes. Providers will be reimbursed their usual and customary charges up to a maximum of the dollar limit indicated on the Benefit Grid. Should you have any questions,

CO-MANAGEMENT: YOUR PATIENTS WILL BENEFIT!

Our co-management program offers many advantages:

- More than 30 locations across Canada
- Over 10 years of experience
- Renowned surgeons with proven expertise
- Latest proven technologies
- Over 99% patient satisfaction
- Personalized service

LASIK MD
VISION

Affordable prices for your patients

Starting at \$490 per eye*

Book a free consultation at
1-877-793-1515 or lasikmd.com
comangement@lasikmd.com

**Free laser
vision correction**
for all optometrists
and optometry
students!

*Prices are subject to change without prior notice and vary on prescription strength. Applicable on a procedure for both eyes only. Other conditions may apply.

please contact your regional Blue Cross office Provider Inquiry Line toll free at 1-888-261-4033.

Modifications du tableau des avantages d'Anciens Combattants Canada

Anciens Combattants Canada (ACC) a révisé récemment le tableau des avantages du Programme de choix (PDC), 14 – Soins de la vue (yeux). Les révisions comprennent un nouveau code d'avantages, un plafond en dollars et des changements des prescripteurs qui entrent en vigueur le 1er octobre 2013. Il convient de signaler que l'on a ajouté les « optométristes » aux prescripteurs dans le cas de plusieurs codes en vigueur. On remboursera aux fournisseurs leurs frais habituels jusqu'à concurrence du plafond en dollars indiqué dans le tableau des avantages. Si vous avez

des questions, veuillez composer sans frais le 18882614033, ligne réservée aux fournisseurs de votre région, Croix Bleue.

American Foundation for the Blind (AFB)

AFB and VisionAware recently launched a new initiative addressing the needs of individuals with vision loss and are asking for help to spread the news. The goal is to underline the importance of eye care services and to influence U.S. policymakers. The tools for the public and providers are found at: Help Us Strengthen Specialized Services. Over 21.2 million Americans report trouble seeing, and that number is on the rise. For adults experiencing vision loss for the first time, the diagnosis can feel overwhelming and stressful. To provide hope and help to handle the challenges of

vision loss, and to connect users with the resources they need, VisionAware created a Getting Started kit, available at visionaware.org/gettingstarted. Comprised of 10 "tip sheets," each sheet addresses practical solutions to everyday tasks such as reading, cooking, using computers, and more. The tip sheets are available as accessible PDFs that can easily be printed and shared.

American Foundation for the Blind (AFB)

L'AFB et VisionAware ont lancé récemment une nouvelle initiative pour répondre aux besoins des personnes en perte de vision et appellent à l'aide pour faire passer le message. Ces efforts visent à souligner l'importance des services de soins ophtalmiques et à agir sur les responsables des politiques aux États-Unis. Les outils qui



You understand what it takes to be an independent eye care professional.

We help you succeed as a business owner.

Only Vision Source® offers all the tools you need to enter and succeed in private practice – to not just survive, but to thrive. We do it with:

- consultative member services program
- marketing tools
- practice support programs
- lowest cost of goods

All so you can provide the absolute best care.

We are single-mindedly committed to the success of independent optometry – this is why we are proud of our **98% member retention** rate since 1991. So discover what **5300 member colleagues** have come to enjoy – inquire about membership today.

"I find my Vision Source consultants are supportive and provide the motivation to help me excel."

Huyen Trinh, OD



Now accepting membership inquiries at VSforYou.ca







It's a superior way to see the world.

Get the tools to help you make a superior recommendation.

Order your Transitions® Signature™ VII Launch Kit now at TransitionsSignature.com

Learn how Chromea7™ breakthrough technology makes these new lenses more responsive to UV in all real-life conditions, and all the reasons your patients will love them.



**8 out of 10 clear lens wearers prefer
Transitions Signature VII lenses to their clear lenses.**



Transitions®
Signature™ VII
ADAPTIVE LENSES

Let the latest technology help your patients
experience Life well lit™.

Available on January 7

Transitions and the swirl are registered trademarks and Chromea7, Transitions Signature and Life well lit are trademarks of Transitions Optical, Inc.
©2014 Transitions Optical, Inc. Photochromic performance is influenced by temperature, UV exposure and lens material.

s'adressent au public et aux fournisseurs se trouvent à : www.afb.org/section.aspx?FolderID=3&SectionID=3&TopicID=553 (Help Us Strengthen Specialized Services). Plus de 21,2 millions d'Américains déclarent avoir des problèmes de vision et leur nombre augmente. Pour les adultes qui vivent une perte de vision pour la première fois, le diagnostic peut sembler écrasant et causer du stress. Afin de donner de l'espoir, d'aider à relever les défis posés par une perte de vision, et d'établir des contacts entre les utilisateurs et les ressources dont ils ont besoin, VisionAware a créé une trousse de démarrage disponible à visionaware.org/gettingstarted. La trousse comporte 10 « fiches-conseils » dont chacune présente des solutions pratiques à des tâches quotidiennes comme l'ire, faire la cuisine, utiliser l'ordinateur, notamment. Les fiches-conseils sont disponibles en documents PDF accessibles faciles à imprimer et à échanger.

The CNIB Baker New Researcher Fund – Call for Applications

The CNIB Baker New Researcher Fund provides one-year grants to encourage new investigations that may lead to the prevention of vision loss. It is intended to benefit new investigators (within 5 years after an academic appointment) by giving them experience and results which can assist them in further grant applications and pilot investigations. For most information on grant eligibility, deadline and application form please visit: <http://www.cnib.ca/en/research/funding/eabaker-researcher/Pages/default.aspx>

Fonds E. A. Baker de l'INCA – Nouveaux chercheurs – Appels à candidatures

Le Programme de subventions et de bourses d'INCA offre des subventions d'une année visant à encourager de

nouvelles recherches pouvant mener à la prévention de la perte de vision. Le Fonds E.A. Baker à l'intention des nouveaux chercheurs vise à apporter un soutien aux nouveaux chercheurs en leur offrant l'expérience et les résultats pouvant les aider dans leurs demandes de subvention et leur recherche pilote. Un nouveau chercheur est une personne affiliée à un établissement de recherche, détenant un poste de professeur et dans le domaine depuis moins de cinq ans. Pour de plus amples renseignements sur l'admissibilité, veuillez visiter :

<http://www.cnib.ca/fr/recherche/financement/eabaker-nouveaux-chercheurs/Pages/Default.aspx>

Optocase Online CE – Free DME Case (including: reading OCT's for diabetic patients)

Optocase (Online CE for Optometrists) currently has two sponsored CE cases at www.optocase.com on Diabetic Macular Edema (DME) and Dry Eye (with RVO coming in Jan/Feb!). In these COPE-approved, multimedia cases you will learn how patients present with DME and Dry Eye, how to diagnose these two conditions, and the latest about how these two conditions are treated. In the DME case you will also learn the things that you should be looking for when you read OCTs

on your diabetic patients. These will not be available for free for much longer, so please take advantage of the cases now. Update: the Optocase site has been translated and is now available in French. Please visit Optocase at www.optocase.com

Optocase – FC en ligne pour les optométristes maintenant disponible en français!

Optocase est maintenant disponible en français! Optocase, FC pour optométristes, offre maintenant huit cas de FC approuvés par le COPE, en français à <http://www.optocase.com/fr/index.aspx>. Les cas valent normalement deux heures de FC approuvée par le COPE et sont valables pour des crédits de catégorie A au Québec. Il y a actuellement deux cas commandités que vous pouvez essayer gratuitement – 1) œdème maculaire diabétique (OMD) et 2) œil sec. Un nouveau cas commandité sur l'OVR sera disponible en janvier et février! Ces cas multimédias vous permettront d'apprendre comment les patients se présentent avec l'OMD et un œil sec, comment diagnostiquer ces deux problèmes et les traitements les plus récents. Dans le cas de l'OMD, vous apprendrez aussi ce qu'il faut rechercher à la lecture des TCO de vos patients diabétiques. Veuillez visiter le site Optocase en français à <http://www.optocase.com/fr/index.aspx>



take the
PLUNGE!
NIAGARA FALLS ONTARIO
2014

Ontario Association of Optometrists
Annual Symposium • April 25-27, 2014

Join us for a great weekend in Niagara Falls including:

- 100+ booths at the OAO InfoMart
- 20+ Hours of Continuing Education
- 2 Streams of Education plus interactive workshops
- 2 Days of Education for Optometric Staff

Plus all new...

- OAO InfoMart Learning Theatre
- EyeFoods Cooking Demonstrations with Celebrity Chef Anna Olson
- Skills Camps for Optometric Staff

Visit www.oaosymposium.com to register and learn more.



1 BAG OF RELIEF GOODS CONTENT: 2 CANS - LIGO SARDINES; 3 PCS - LUCKY ME NOODLES; 2 PCS - COFFEE NESCAFE 25GRAMS; 2 PCS - SUGAR; ¼ HERMANO; 2 PCS - ARGENTINA MEAT LOAF 250GRAMS; 5 KILOS - RICE SINANDOMENG; ESTIMATED AMOUNT 1 RELIEF BAG: 10\$

NOTE: THE ABOVE CONTENT OF 1 RELIEF BAG IS ENOUGH TO FEED 5 MEMBER HOUSEHOLD FOR 3 DAYS.

International Outreach – Manila

CAO Past President, Dr. Pasq Marcantonio, continues to expand eye care services in Manila, Philippines, with the support of a variety of individuals in Canada and the Philippines. In what usually takes 2-4 years to achieve, this past year has seen the establishment of two eye clinics, one a fully functioning Optometry clinic and the second, a cataract clinic, within weeks of opening. For those interested in updates and trip reports, Dr. Marcantonio is happy to add you to his email list. Contact him at: pasqualinomarcantonio@gmail.com.

Update: Dr. Marcantonio left the Philippines in advance of Typhoon Haiyan. Personnel at the eye clinic in Manila is organizing a food parcel drive and will provide food baskets each containing enough for a family of five for three days. A \$100 donation will buy 30 parcels, as shown. This is an effective way to help with efforts going directly to those in need. Donations may be sent to **Canadian Vision Care, 9018 Scurfield Dr. N.W., Calgary, AB, T3L 1V4, Attention: France Giroux, re: Manila Project.** A tax receipt will be issued.

Activités à l'étranger – Manille

L'ancien président de l'ACO, le Dr Pasq Marcantonio, continue d'étendre des services de soins ophtalmiques à Manille, aux Philippines, avec l'aide de nombreuses personnes au Canada et aux Philippines. Alors qu'il faut habituellement de deux à quatre ans pour y parvenir, on a établi au cours de l'année écoulée deux cliniques d'examen des yeux, la première, une clinique d'optométrie entièrement fonctionnelle et la deuxième, une clinique de traitement des cataractes, en quelques semaines seulement. Le Dr Marcantonio est heureux d'ajouter à sa liste d'abonnés ceux que des mises à jour et des comptes rendus de voyage intéressent. Il suffit de communiquer avec lui à : pasqualinomarcantonio@gmail.com.

Mise à jour : le Dr Marcantonio a quitté les Philippines avant le typhon Haiyan. Les membres du personnel de la clinique des yeux de Manille organisent une collecte de colis d'aliments et fourniront des paniers d'aliments dont chacun suffira pour nourrir une famille de cinq personnes pendant trois jours. Un don de 100 \$ permettra d'acheter 30 colis. C'est un moyen efficace d'aider directement les personnes dans le besoin. On peut faire parvenir ces dons à **Canadian Vision Care, 9018, prom. Scurfield N.O., Calgary AB T3L 1V4, à l'attention de : France Giroux, objet : Projet Manille.** Un reçu aux fins de l'impôt sur le revenu sera établi.



In Memoriam

CAO was saddened to learn of the death of Dr. Donald Reginald Price (Sept. 8, 1929 – Sept. 21, 2013). Following graduation in Toronto in 1951, Dr. Price practiced with Dr. Ken Barry in North Bay before moving to Gananoque in 1954 where he continued to practice until he retired in 1997. Dr. Price served the profession well. In 1961, he was president of the Ontario Association of Optometrists. He was president of the Canadian Association of Optometrists 1963-1965. For many years, he served the College of Optometrists of Ontario as a member of the Optometry Review Committee. He will be greatly missed by his colleagues, family, friends, and community.

L'ACO a été désolée d'apprendre le décès du Dr Donald Reginald Price (8 septembre 1929 - 21 septembre 2013). Après avoir obtenu son diplôme à Toronto en 1951, le Dr Price a pratiqué avec le Dr Ken Barry à North Bay avant de déménager à Gananoque en 1954, où il a continué de pratiquer jusqu'à son départ à la retraite en 1997. Le Dr Price a bien servi la profession. En 1961, il a été président de l'Association des optométristes de l'Ontario. Il a présidé l'Association canadienne des optométristes de 1963 à 1965. Pendant des années, il a siégé au Comité d'examen de l'optométrie de l'Ordre des optométristes de l'Ontario. Il manquera énormément à ses collègues, sa famille, ses amis et sa communauté.

Take Action to Ensure Client Loyalty

BY PAULINE BLACHFORD

Online eyewear retailers and mega-businesses, such as Costco and Walmart, are gaining ground in the eye health industry. While clients still prefer receiving eye exams from optometrists, a recent *Bain & Company* study cautions that "the fact that revenue for optometrists has not declined – yet – may be lulling doctors into a false sense of security."¹ Optometrists must be proactive in order to retain their clients and grow their patient database.

Having spent over 17 years speaking directly with patients on behalf of White Rock Optometry and after consulting numerous optometry practices, I have a unique perspective on how to nurture and grow a patient database. The opinions I formed from my experience match the research findings on this issue.

A recent South African study on optometry practice management suggests that, in order to compete against online eyewear retailers and mega-businesses, optometrists should focus on client loyalty. Loyal clients make more purchases over time, are more willing to pay premium prices, and often refer new clients to the practice. In addition, it costs five times more money to attract a new client than to properly service an existing client.²

Many optometrists believe they can ensure client loyalty by providing an excellent eye health exam. Unfortunately, research shows it takes more than that. In fact, 85% of clients who defect to other optometrists were satisfied with the service they received just prior to defecting.³ In order to ensure client loyalty, optometrists must also establish trusting relationships with their clients.⁴

Marketing scholars have found that the best way for companies to establish trust with their clients is through "relational marketing." The theory of relational marketing posits that solidifying relationships with existing clients is just as important as attracting new clients.⁵

The key to solidifying these relationships is communication: "communication leads to trust and trust to relational commitment."⁶ An ideal time for optometry practices to communicate with patients is while informing them they are due for an eye exam. This "recalling" can be done through postcards, letters, and emails. But telephone recalling is the only means that permits a two-way conversation.

Two-way communication is critical to developing trusting relationships because clients prefer "more personalized, closer relationships with service providers."⁷ Furthermore, being dealt with one-on-one satisfies a client's basic human need to feel important.⁸ For these reasons, when consulting optometrists on increasing their revenue and growing their practice, I always recommend implementing a sophisticated and rigorous telephone recalling strategy.

If done incorrectly, telephone recalling is nothing more than a glorified postcard. Therefore, a telephone recalling strategy must include thorough coaching for the practice's recallers. I coach telephone recallers to foster trusting relationships with clients while also growing the client database. This transforms the recaller into an ambassador and revenue generator for the clinic.

Despite these benefits, some optometrists do not use telephone recalling because of cost concerns. While other forms of recalling can be effective supplementary methods of communicating, I encourage optometrists to invest in telephone recalling for three reasons. First, the "return on investment" of a properly coached recaller will far out-weigh the cost. When I was a recaller, I booked over thirty appointments per day – not including call-backs. I now coach recallers to have similar results. The cost of the recaller's salary and coaching is a fraction of the profits from these appointments.

Second, the cost of mail-outs and emails is often under calculated because we forget to include the time it takes employees to answer the client's response and schedule the appointment. When this time is factored, the cost of emails and mail-outs is similar to recalling; yet the results are inferior. Third, given the threat created by new competition in the industry and the low cost of retaining clients compared to attracting new ones, optometry practices cannot afford to cut corners when it comes to communicating with their clients.

Another common reason optometrists hesitate to adopt telephone recalling is they assume their patients will not like being called. To the contrary, marketing surveys show clients appreciate when companies keep in touch, with 80% saying it was "important."⁹ My experience is consistent with the research. I almost never felt my calls were unwelcomed. In fact, most clients, particularly the busy ones, appreciated that I made it easy for them to book an appointment.



Pauline consults optometrists on how to nurture and grow their client database. She has abundant experience in the eye health industry, including 17 years working in client relations for White Rock Optometry. Pauline presents on topics related to practice management and will be speaking at the BCAA's Conference in February. For more information, contact Pauline at: info@paulineblachford.com

As the industry becomes increasingly competitive, optometry practices will not be successful if they remain passive in their approach to building client loyalty. Investing in an effective telephone recalling strategy will help optometry clinics build the trusting relationships necessary to keep their clients coming back and their practices growing.

References

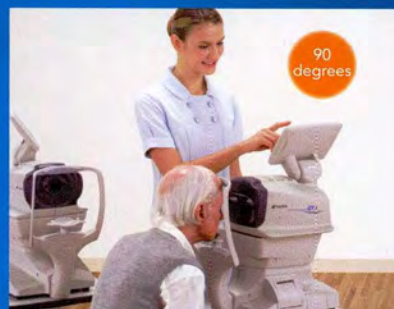
1. Spaulding, Elizabeth (2012). Do you see what we see? The future of independent optometry. *Bain and Company*, 1 – 7, 1.
2. van Vuuren, T., Roberts-Lombard, M., and van Tonder, E. (2012). Customer satisfaction, trust and commitment as predictors of customer loyalty within an optometric practice environment. *Southern African Business Review*, 16(3), 81-96, 82.
3. Dillehay, S.M. (2006). Ways to improve patient loyalty. *Review of Optometry*, 143 8-8.
4. *Supra* note 2 at 85.
5. Berry, Leonard, L. (2001). Relationship marketing of services: growing interest, emerging perspectives. *Journal of the Academy of Marketing Science*. Volume 23, No. 4, 236-245, 236.
6. *Ibid* at 243
7. *Ibid* at 238
8. *Ibid* at 238
9. *Ibid* at 242

NEW KR-1 & CT-1P

The Next Generation of Refractive Care & Tonometry



- Easy to use colour touch screen control panel
- Adjustable control panel
- Fully automated measurements at a touch
- Ergonomic and comfortable design for operator and patients
- KR-1 Auto Kerato-Refractometer: speedy, accurate, and repeatable refraction and keratometry measurements
- CT-1P High-performance non-contact Tonometer with built-in Pachymeter: stable IOP measurement with soft Air-Puff & Corneal thickness measurement for IOP compensation (CT-1P only)



Incredible space saving and flexible layout, especially if combining KR-1 & CT-1P (instruments positioned side by side, 90 degrees, or face to face).

Also available: **CT-1** (model without built-in pachymeter)

TOPCON CANADA INC.


Exclusive Canadian distributor for:
Topcon, Amtek, Welch Allyn, Gulden, M&S Technologies,
Tinsley (Selected Products), Icare, Mortan

www.topcon.ca

e-mail: info@topcon.ca

Eastern Canada • 1-800-361-3515

Ontario • 1-800-387-6768

Western Canada • 1-800-661-8349



The COETF Annual Awards Program for 2013

The Canadian Optometric Education Fund (COETF) received a total 36 applications for awards in 2013. Of those 36 applications, 24 were granted at least partial funding for projects or research. In most cases, applicants are not given full funding as the total amount of funding requested greatly exceeds the money available for granting. Awards funding is based on the Trust Fund's interest earned over the previous year.

All award recipients are required to submit an interim report on their project and a final report upon completion. In an effort to recognize some of the projects and research being done by COETF award recipients the Awards Committee will publish project reports in the Canadian Journal of Optometry (CJO) so that our members across the country can learn more about where COETF funding goes, as well as highlighting exciting optometric research.

QUICK FACTS

The COETF was created in 1976 by the members of the Canadian Association of Optometrists to assist programs in research, education and human resources development in the vision and eye care field in Canada. Through its annual program of Awards, the COETF has supported faculty development, research and/or specialized education programs carried out by graduate students and investigative projects conducted by undergraduates and faculty at Canada's schools of optometry, as well as projects undertaken by independent practitioners or members of the public.

The COETF Annual Award Recipients for 2013

SCHOOL OF OPTOMETRY, UNIVERSITY OF WATERLOO

Mosaad Alhassan: *MKH-Hasse charts of binocular vision measurements: Repeatability and validity of associated phoria and stereo tests* (Master's Degree Program)

Sarah Bishop: *Comparison of Goldmann target sizes III, V and VI for automated perimetry in early glaucoma* (Master's Degree Program)

Steven Cheung: *In vitro analysis of wet-tability and anti-adhesive properties of PRG4 on hydrogel contact lenses* (Master's Degree Program)

Stacey Chong: *Identification of mitotic cells in optic nerve sectioned eyes* (Master's Degree Program)

Jaya Dantam: *Influence of contact lens materials on bacterial binding* (Post-Doc Fellow)

Emma Dare: *Identification of essential components for corneal epithelial wound healing*

Tanya D'Cruz: *Can adaptive properties explain differences gradient and calculated AC/A ratios*

Museum of Visual Science: *Historical Archive/Museum Exhibit*

Alex Hui: *In vitro antimicrobial activity of model ciprofloxacin releasing silicone hydrogel contact lens materials* (PhD Program)

Vivek Labhishetty: *Calibration of dynamic photorefractive system* (Master's Degree Program)

Nicholas Lorentz: *Investigation in vergence adaptation* (PhD Program)

Leslie McNeill: *The temporal properties of suppression in humans with amblyopia*

APPLICATIONS SUMMARY

Total Waterloo School of Optometry Applications	29	\$ 142,095.68
Total Waterloo School of Optometry Awards	19	\$ 34,000.00
Total Montréal École d'Optométrie Applications	4	\$ 16,615.00
Total Montréal École d'Optométrie Awards	3	\$ 7,000.00
Total Vision Institute Applications	1	\$ 5,079.35
Total Vision Institute Awards	0	
Total Independent Practitioner Applications	2	\$ 5,445.00
Total Independent Practitioner Awards	2	\$ 3,500.00
Total Applications for 2013	36	\$ 169,235.03
Total Awards for 2013	24	\$ 44,500.00
Total Applications (since inception)		\$6,587,102.79
Total Awards		\$1,821,013.00

Alex Muntz: *In vitro* assessment of Quantum Dot stability in conjunction with commercial contact lens materials (Master's Degree Program)

William Ngo: *Imaging meibomian glands with OCT* (Master's Degree Program)

Chau-Minh Phan: *In vitro* uptake and release of natamycin encapsulated in PLA-Dex Nanoparticles from silicone hydrogel contact lens materials (PhD Program)

Rajkumar Nallour Raveendran: *Eye movements in strabismus* (Master's Degree Program)

Hendrik Walther: *The effect of lipid oxidation on the tear film structure and its influence in dry eye disease* (Master's Degree Program)

Witer Learning Resource Centre: *Continuance of Library Information Resources & Services for Canadian Optometrists' Program*

Gah-Jone Won: *The effects of non-muscle inhibitors on the avian crystalline lens* (Master's Degree Program)

ÉCOLE D'OPTOMÉTRIE, UNIVERSITÉ DE MONTRÉAL

Marie-Pier Dufour, Gabrielle Lapointe, Caroline Faucher : *Le test de concordance de script (TCS) pour évaluer le raisonnement clinique d'étudiants en optométrie: un projet pilote*

Hélène Kergoat, Elizabeth Irving : *Insuffisance de convergence et maladie de Parkinson*

My Tien Pham, Remy Marcotte : *Volume of tears in the inferior gaze: A comparative study of Schirmer*

INDEPENDENT PRACTITIONER

Alissa Boroditsky: *Oral History of Optometry in Canada*

Tim Maillet: *Immunomodulation effects of 0.05% cyclosporine ophthalmic emulsion on tear pro-inflammatory and anti-inflammatory cytokines following intralase laser in situ keratomileusis*

COETF Reports

In an effort to highlight some of the projects and research by COETF award recipients, the COETF Trustees and Awards Committee have selected project reports to be published in the Canadian Journal of Optometry (CJO). Recognizing that many recipients intend to publish their work in cited journals, the reports are not considered to be clinical articles. The COETF reports are intended to provide relevant information for the benefit of our readers and to showcase the high calibre of optometric research funded by COETF, Canadian optometry's charity.

Research and academic support are vital to our profession.

To apply for a COETF award in 2014, download a registration form: http://opto.ca/wp-content/uploads/0/coetf_application_2014-EN.pdf

Français : http://opto.ca/wp-content/uploads/0/COETF_Application_2014_FR.pdf

COETF is our charity and needs our contributions, now more than ever. Please give generously and often. To donate online or download a donation form, visit: opto.ca/coetf

Lien français : opto.ca/ffoce

A vision for the future • Une vision pour l'avenir



CRA Registered Charity / Numéro d'organisme de bienfaisance de l'ARC #118834852

The Canadian Optometric Education Trust Fund (COETF) advances growth, research and education in Canada. This is our charity—a trust fund for the profession, supported by the profession.

Invest in optometry's future. Make a charitable donation today.

opto.ca/coetf

Grâce à votre don de bienfaisance, vous favorisez la recherche, la croissance, l'éducation et le développement de la profession optométrique au Canada.

Faire un don de bienfaisance aujourd'hui.

opto.ca/ffoce

CANADIAN
OPTOMETRIC EDUCATION
TRUST FUND



FONDS DE FIDUCIE DES
OPTOMÉTRISTES CANADIENS
POUR L'ÉDUCATION

White Coat Ceremonies

School of Optometry and Vision Science, University of Waterloo – Class of 2017



Class of 2017 reading the code of ethics at the White Coat Ceremony.

Cérémonie du sarrau blanc

École d'optométrie, Université de Montréal – Class of 2017



SOLOCARE AQUA®

Lens Protection And All-day Comfort

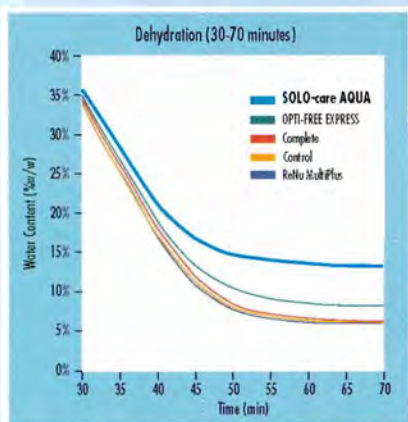
By Shalu Pal, OD, FFAO
Toronto, Canada

Choosing the right lens and pairing it with proper lens care is important. At a minimum, a cleaning and disinfecting system must be safe for the ocular surface, effective at eliminating pathogenic microorganisms, and it must enhance lens comfort. The SOLOCARE AQUA® Lens Care System provides an extra safety component for added benefits for patients.

Safety, efficacy and comfort

SOLOCARE AQUA® All-in-One Solution has a proven track record as a safe and effective soft lens care solution. Polyhexanide (0.0001%) is the preservative and disinfectant in this solution. Its unique chemical structure selectively attacks the cell walls of microorganisms. Polyhexanide binds to clearly exposed phospholipids on the outer plasma membranes of microorganisms. The result is a safe ocular surface.¹

SOLOCARE AQUA® contains two key comfort ingredients. Provitamin B5 (dexpanthenol) surrounds the lens and adds moisture, and sorbitol absorbs and binds moisture to the lens. Together, these agents create the HydroLock™ effect that locks in moisture to improve hydration for all-day comfort (figure 1) SOLOCARE AQUA® is well accepted by patients, who report high levels of comfort according to studies by Amos in 2004 and Miller and Dillehay in 2007.

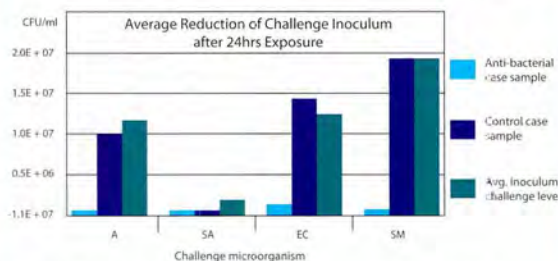


► Figure 1. Laboratory test with vificon A lenses (55% water content) recreates a real-world dry-air environment similar to an air-conditioned or heated office.

Antimicrobial silver ions

Often, the most forgotten part of a good lens care regimen is the lens case. Many microorganisms secrete a protective membrane, a biofilm, when they come in contact with a surface. This biofilm renders the microorganism resistant to disinfectants in contact lens solutions.²

Antibacterial MicroBlock® lens case kills bacteria on contact



Efficacy of an Anti-Microbial Lens Case, Melanie George MS, Marc Ajello BS, Mark Tsao PhD, Allen Gillard BS and Alicia Sills MS - CIBA Vision Corporation, Duluth, GA - A Novartis Company

► Figure 2.

Various studies have shown that 20% to 80% of lens cases are contaminated with bacteria, fungi and other pathogenic organisms, and their biofilms render solutions ineffective against them. The result is pathogenic transfer to the corneal surface when lenses are applied.

SOLOCARE AQUA® breaks down this barrier with its unique MicroBlock® case. The case and cap are impregnated with antimicrobial silver ions that reduce bacterial contamination and development of biofilms.^{3,4}

Contact lens cases should be rinsed with the multipurpose solution being used, but, unfortunately, most patients rinse their cases with tap water. The bacteria in water is the primary source of bacteria buildup in lens cases. The MicroBlock® case not only destroys water-borne microorganisms but also prevents the growth of new bacteria.

Reference 1. Jones L, Christie C. Soft contact lens solutions review: part 2. Modern-generation care system composition and clinical performance. Optometry in Practice. 2008;9:43-62. 2. Dart J. The inside story: why contact lens cases become contaminated. Cont Lens Anterior Eye. 1997;20:143-118. 3. Akiyama H, Yamasaki O, Kanazaki H, Tada J, Arata J. Effects of sucrose and silver on Staphylococcus aureus biofilms. J Antimicrob Chemother. 1998;42:629-634. 4. Hetrick EM, Schoenfeldt MH. Reducing implant related infections: active release strategies. Chem Soc Rev. 2006;35:780-789. 5. Dantam J, Zhu H, Stapleton F. Bacterial efficacy of silver-impregnated contact lens storage cases in vitro. Invest Ophthalmol Vis Sci. 2011;52:51-57. 6. Efron N. The truth about compliance. Cont Lens Anterior Eye. 1997;20:79-86. 7. Smith SK. Patient noncompliance with wearing and replacement schedule: of disposable contact lenses. J Am Optom Assoc. 1996;67:160-164.

The MicroBlock® lens case has been shown to kill Pseudomonas aeruginosa, Staphylococcus aureus, Escherichia coli and Serratia marcescens (figure 2).⁵

Safety boost

Good lens hygiene and the right products play key roles in minimizing the risks of corneal infection. Unfortunately, more than 50% of patients do not adhere to the proper lens care regimens prescribed.^{6,7} With its unique MicroBlock® lens case, SOLOCARE AQUA® provides an extra measure of safety by locking out bacteria and minimizing biofilms. With more than 8 years of clinical experience behind it, SOLOCARE AQUA® is the only system that offers an efficacious combination of excellent comfort and extra safety.

For starter kits, contact:

T - 877.728.7486

E - solocare@aurium.ca



www.meniconamerica.ca



Checklists for Optometry

What can healthcare learn from aviation? In a word; checklists. Like a number of OD's, I took up private aviation as a hobby. And like all pilots I learned to fly and not die by using checklists for every aspect of flight. How does this apply to business? Well, if you want to provide high quality care, it makes sense to learn from the lessons of aviation. This article will provide the basics of how to create checklists for your office and then USE THEM. A book most OD's should read is "The Checklist Manifesto" by Atul Gawande, M.D. It is a great book about how medicine is slowly learning the value of using checklists to provide better clinical care at better value for all involved. Follow the Checklist For Checklists, to develop, draft & refine checklists for your office.

Other industries long ago learned to use checklists. Construction of any large building uses many experts so to ensure the structure does not fail, and all parties communicate, checklists are used extensively. In fact, checklists and automatic email are built into high quality project management software. You have to ask everyone on the team to talk to each other and take responsibility. Does this happen on your team at the office? Many offices build in system to cover up problems, not take responsibility for them.

There are three types of problems. Simple. Complicated. And Complex. Simple problems are ones we can solve by following a formula. Mixing and baking cookies is a simple problem, just like running an auto-refractor. Follow the formula and you will get consistent results. Checklists can help here but often are not needed. Complicated problems are things like building a car to grinding, coating and edging ophthalmic lenses or doing an eye exam. Usually you can break complicated problems into a number of simple problems. While there is no simple recipe to complicated problems, over time with trained, qualified and conscientious people on teams with the proper expertise, using good timing and co-ordination, complicated problems can be routinely solved. Checklists work really well for various steps of complicated problems. Complex problems are things like raising a child, running a healthcare system, or building an airline. The reason they are complex is that the child, or pilot's environment, or technology in



BY / PAR GERRY LEINWEBER, OD, BSC

healthcare is always dynamic. Each child is different, one is celiac, one is lactose intolerant so "follow the food guide" does not work! Complex problems are solvable but they require knowing all the various recipes to respond to the dynamic needs. They require expertise with appropriate training. They require wisdom knowing when to use what recipe and, most vital, when to throw the checklists out.

PROBLEM TYPE	SIMPLE	COMPLICATED	COMPLEX
Succeed via:	To do list	Checklists	Wisdom
Eyecare e.g.s.	-1.00 SV Rx filled	Prog. Lens Rx'd	Troubleshoot prog Rx

In Malcolm Gladwell's book "Blink" the process of thin-slicing to pay attention only to the key data to make correct decisions is described in depth. The story related is about Chicago's Cook County Hospital's ER and the way their MD's responded to patients presenting with chest pain – a possible heart attack! Turns out MD's had to be retrained to disregard 95% of the medical data and only pay attention to three critical pieces of data: Is the angina unstable? Is there fluid on the lungs? Is the systolic BP less than 100? A good checklist would have this information, but would not have the flow chart of what to do with each possible permutation/combination of possible results. That is where wisdom and expertise come in. A well designed checklist would have the professional pay attention to the right factors at: key times.

The process to create a valid, efficient checklist is to start with

a clear concise objective. Each item on the checklist must be a critical step, is not checked by another mechanism, is a clear action with a response, can be read out loud and is a process that a checklist can help. Make sure the checklist improves communication on the team, so involve them all in the creation and testing of the checklist. Then draft your checklist using natural breakpoints in the flow, use simple sentences with basic words, have a title in BOLD and CAPITALIZED. A good checklist is simple, logical and fits on one small page with a font sans serif that is easy to read, so no need for fancy colours, just dark print on a light background. Avoid more than 10 items between natural breakpoints. Finally mark the date of creation and revision. The final step is to validate the checklist by testing it, and getting feedback. At our office we used about 30 minutes in the first meeting (we split the staff up to do different checklists based on their area of the office) and then about 10 minutes per checklist for revisions and feedback in the next three team meetings. Email me if you want more samples developed both for clients and our own office. Most vital, then insist you and your staff to use the checklists by asking how the checklist improved the quality of care which ultimately will increase your profitability.

Examples of proven checklists in Aviation and Eyecare of an "Emergency Eye" call.

LANDING CHECKLIST FOR SMALL AIRCRAFT	PHONE CALL CHECKLIST FOR "EYE EMERGENCY"
GUBMPS Gas – Fuel on fullest tank Undercarriage – wheels down & locked Brakes – pumped to ensure ready Mixture – Fuel mixture is as required Propellers – set pitch for landing Seatbelts on –	OVIFDA Onset Vision impact Intensity of the problem Frequency; constant, unstable, increasing Duration; how long has it lasted Any other health issues at the same time?

To check a checklist, ask if there is a clear, concise objective. There is not checklist to fly a plane, but separate ones for most steps of flying, from Preflight to Taxi, to Take Off, to Approach, Landing and Shut down. Pick a small specific area you want to make a sample checklist for use in your office. It is a team building exercise and I can assure you it will make your office run better if properly designed. As a reference to learn more, see <http://gawande.com/the-checklist-manifesto>

**My blog is called EyeXperts Collaborate.
It can be found at: www.eyexperts.net**

Les listes de contrôle en optométrie

Qu'est-ce que les soins de santé peuvent apprendre de l'aéronautique? En quelques mots : les listes de contrôle. Comme de nombreux DO, l'aviation privée est mon passe-temps. Et comme tous les pilotes, j'ai appris à voler et à éviter de mourir en utilisant des listes de contrôle portant sur tous les aspects du vol. Comment ce principe s'applique-t-il aux affaires? Si vous voulez fournir des soins de grande qualité, il est logique de tirer des leçons du monde de l'aéronautique. Cet article décrit les aspects fondamentaux de la façon de créer des listes pour votre bureau et ensuite de LES UTILISER. La plupart des DO devraient lire « The Checklist Manifesto », d'Atul Gawande, M.D. C'est un excellent ouvrage qui décrit comment la médecine apprend lentement qu'il vaut la peine d'utiliser des listes de contrôle pour fournir de meilleurs soins cliniques à une meilleure valeur pour tous les intéressés. Suivez la liste de contrôle des listes afin de créer, de rédiger et de peaufiner de telles listes pour votre cabinet.

D'autres secteurs d'activité ont appris il y a longtemps à utiliser les listes de contrôle. La construction de toute structure importante exige l'intervention de nombreux experts et pour éviter que la structure s'effondre et veiller à ce que toutes les parties communiquent, on utilise à fond les listes de contrôle. Les logiciels de gestion de projet de grande qualité comportent en fait des listes de contrôle et des messages électroniques automatiques. Il faut demander à chaque membre de l'équipe de se parler et d'assumer ses responsabilités. Cela se fait-il dans votre équipe au bureau? Beaucoup de bureaux établissent des systèmes pour cacher les problèmes et non pour en assumer la responsabilité.

Il y a trois types de problèmes : simples, compliqués et complexes. Les problèmes simples sont ceux qu'il est possible de régler en suivant une formule. Mélanger des biscuits et les faire cuire, c'est un problème simple, tout comme l'utilisation d'un autoréfracteur. On obtient des résultats uniformes en suivant la formule. Les listes de contrôle peuvent aider en l'occurrence, mais souvent, elles ne sont pas nécessaires. Les problèmes compliqués varient, par exemple, de la construction d'une automobile au meulage de lentilles optiques ou à l'examen des yeux. Il est habituellement possible de subdiviser un problème compliqué en un certain nombre de problèmes simples. Même s'il n'y a pas de recette simple à suivre pour régler les problèmes compliqués, il est possible d'en régler de façon routinière avec le temps et des personnes consciencieuses, qualifiées, qui ont reçu la formation nécessaire et font partie d'équipes possédant le savoir-faire nécessaire et utilisant une bonne synchronisation et une bonne coordination. Les listes de contrôle donnent de vraiment bons

résultats lorsqu'il s'agit de franchir diverses étapes de problèmes compliqués. L'éducation d'un enfant, l'administration d'un système de santé ou la mise sur pied d'une ligne aérienne, par exemple, constituent des problèmes complexes. Ils sont complexes parce que l'enfant, l'environnement du pilote ou les technologies de la santé sont toujours dynamiques. Chaque enfant est différent : un a la maladie céliaque, l'autre ne tolère pas le lactose : impossible donc de « suivre le guide alimentaire »! Il est possible de régler les problèmes complexes, mais il faut connaître toutes les diverses recettes pour répondre aux besoins dynamiques. Il faut un savoir-faire qui découle d'une formation appropriée, et savoir quand utiliser judicieusement quelle recette, et quand jeter la liste de contrôle.

TYPE DE PROBLÈME	SIMPLE	COMPLIQUÉ	COMPLEXE
Succès via :	Recette « liste choses à faire »	Listes de contrôle, experts	Listes de contrôle, sagesse
Soin des yeux	Ordonnance de moins 1,00 sv remplie	Ordonnance de lentilles progressives	Patient et lentilles progressives

Dans son ouvrage intitulé « Blink », Malcolm Gladwell décrit en détail le processus d'éminage qui sert à faire attention aux données principales seulement pour prendre les bonnes décisions. L'anecdote porte sur le Service d'urgence de l'Hôpital du comté de Cook à Chicago et sur la façon dont ses médecins ont réagi aux patients qui se présentaient en se plaignant de douleurs à la poitrine – cas possible de crise cardiaque! Il a fallu donner aux médecins une nouvelle formation pour leur apprendre à laisser tomber 95 % des données médicales et à se concentrer sur trois éléments de données critiques seulement : L'angine est-elle instable? Le patient a-t-il du liquide dans les poumons? La TA systolique est-elle inférieure à 100? Une bonne liste de contrôle contiendrait ces renseignements, mais non l'organigramme de ce qu'il faut faire avec chaque permutation/combinaison possible de résultats possibles. C'est là qu'interviennent la sagesse et le savoir-faire. Une liste bien conçue inciterait le professionnel à se concentrer sur les bons facteurs à des moments cruciaux.

Une liste de contrôle valide et efficiente émane d'un objectif clair et concis. Chaque élément de la liste doit constituer une étape critique, n'est pas vérifié par un autre moyen, constitue un acte clair qui comporte une intervention, peut être lu à haute voix et constitue un processus qu'une liste de contrôle peut appuyer. Il faut s'assurer que la liste de contrôle améliore la communication à l'intérieur de l'équipe et c'est pourquoi il faut faire participer tous ses membres à la création de la liste et à son essai. Il faut ensuite rédiger votre liste en utilisant les pauses naturelles dans le

cheminement, utiliser des phrases simples et des mots élémentaires, inscrire un titre en CARACTÈRES GRAS et en MAJUSCULES. Une bonne liste de contrôle est simple, logique et tient sur une petite page présentée dans une police de caractères sans sérif facile à lire. Inutile donc d'utiliser des couleurs vives : des caractères foncés sur fond pâle suffisent. Il faut éviter d'énumérer plus de 10 points entre les pauses naturelles. Il faut enfin indiquer les dates de création et de révision. La dernière étape consiste à valider la liste en la mettant à l'essai et en réunissant des commentaires. À notre bureau, nous avons utilisé une trentaine de minutes au cours de la première réunion (nous avons réparti les membres du personnel et leur avons demandé de dresser des listes différentes en fonction de leur secteur d'activité au bureau) et ensuite une dizaine de minutes par liste pour les révisions et les commentaires au cours des trois réunions suivantes de l'équipe. Si vous voulez que l'on crée d'autres échantillons à la fois pour des clients et pour votre propre bureau, faites-le moi savoir par courriel. Il est très vital d'insister ensuite pour que votre personnel et vous-même utilisiez les listes en demandant comment la liste de contrôle a amélioré la qualité des soins, ce qui améliorera finalement votre rentabilité.

Exemples de listes de contrôle qui ont fait leurs preuves en aéronautique et en soins ophtalmiques pour un appel « d'urgence oculaire ».

LISTE DE CONTRÔLE POUR L'ATERRISSAGE D'UN PETIT AÉRONEF	LISTE DE CONTRÔLE TÉLÉPHONIQUE POUR UNE « URGENGE OCULAIRE »
CTFMHC Carburant – carburant dans le réservoir le plus plein Train – train sorti et verrouillé Freins – pompes pour s'assurer qu'ils sont prêts Mélange – mélange de carburant requis Hélice – pas réglée pour l'atterrissage Ceintures de sécurité bouclées –	AEIFDA Apparition Effet sur la vision Intensité du problème Fréquence; constant, instable, de plus en plus grave Durée : depuis quand? Autre problème de santé simultané?

Pour vérifier une liste de contrôle, il faut demander s'il y a un objectif clair et concis. Il n'y a pas de liste pour piloter un avion, mais il existe des listes distinctes pour la plupart des étapes du pilotage, depuis la vérification avant le vol jusqu'à l'immobilisation au retour, en passant par la circulation à la surface, le décollage, l'approche et l'atterrissage. Choisissez un domaine précis et restreint où vous voulez dresser un exemple de liste de contrôle à utiliser à votre bureau. C'est un exercice de création d'équipe et je vous garantis que votre bureau fonctionnera mieux si la liste est bien conçue. Pour en savoir davantage : <http://gawande.com/the-checklist-manifesto>

Teaming up for Humanity – Eyecare Mission in Peru

BY ZOÉ LACROIX

Uncorrected refractive error is the leading cause of visual impairment worldwide.¹ In Peru alone, the vision of over half a million people could be restored with prescription glasses.² To patients living in developing countries, a basic eye exam can be life changing; it improves educational and employment opportunities, economic stability and quality of life. As a third year optometry student, I had the opportunity to witness this impact during a humanitarian mission in Peru this summer.

Our team of forty-five volunteers, led by the Montreal-based Santa Cruz chapter of the Volunteer Optometric Services to Humanity (VOSH), helped improve global access to eye care by offering services to the community of Casma. Optometrists, opticians, volunteers, and 27 students from both Canadian optometry schools united to examine nearly 4,500 patients over the clinic's six-day duration.

Patient lineups were never-ending and served as a fuel to perform efficient and concise examinations. Being limited to rudimentary equipment,



Marie-Pier Gascon, third year optometry student at the University of Montreal, performing a portable slit lamp examination

we learnt to do more with less, mastering fundamental optometry skills using a lens bar and a trial lens kit. Due to the tropical geographical setting, we examined a broad range of diseases uncommon in northern developed countries such as trachoma, toxoplasmosis, pterygium, advanced cataracts, end-stage glaucoma, and untreated infections, inflammation and trauma. These missions present a great opportunity

for students and optometrists to apply their skills and training while offering direct eye care to patients.

After the examination, patients proceeded to the dispensary, where they could receive prescription glasses. Each volunteer brought hundreds of donated glasses, previously cleaned, measured, and sorted, to provide patients with immediate vision corrections. It is incredibly rewarding to witness the lasting

"In North America, the things we get frustrated or angry with for not having (the perfect pair of glasses, contact lenses, etc) are a luxury we take for granted. It was incredibly humbling seeing how something as simple as aqueous tears or a pair of old fashioned glasses could be completely life-changing for a person. Their overwhelming gratitude is something that I will never forget."

– Rajan Mistry, third year optometry student, University of Waterloo



The team of volunteers

impact these examinations and glasses can have on someone's life.

In addition to exam and dispensing abilities, patient relations improved throughout the week. At the beginning of the clinic, volunteers were faced with both language and cultural challenges, with many Spanish-speaking patients receiving their first eye-exam. Patience, dedication, and a bit of improvisation allowed for improved communication, stronger relations, and increased confidence.

The small village of Casma was quick to show its gratitude for the services received. In addition to the smiling faces, "muchas gracias!"

and hugs received, the community planned events to thank the volunteers in a traditional way: a town square parade, flag ceremony, visit to local ruins, and a Peruvian dance showcase and reception.

After the clinic was completed, volunteers enjoyed a week of traveling to discover the beautiful wonders of Peru such as Lima, Cusco, and Machu Picchu. The entire team returned home with a sense of accomplishment and fulfillment. Taking the time to participate in a humanitarian mission is beyond worthwhile for the enriching and mind-opening experience.

My experience with VOSH was unforgettable. I would encourage everyone to get involved in a humanitarian mission, and there are many opportunities throughout the year! Anyone interested can find additional information at: **www.vosh.org**.

References

1. Visual impairment and blindness, Fact Sheet N° 282. World Health Organization; 2012 [09/15/2013]; Available from: <http://www.who.int/mediacentre/factsheets/fs282/en/index.html>
2. Resnikoff S, Pascolini D, Mariotti SP, Pokharel GP. Global magnitude of visual impairment caused by uncorrected refractive errors in 2004. Bulletin of the World Health Organization. 2008;86(1):63-70.

An Overview of Provincial Health Coverage for Optometric Care in 2013

Province	Eye Health Coverage
British Columbia	The BC Medical Services Plan has limited coverage for optometrists' services, and optometrists may collect a reasonable co-payment from their patients. Routine examinations are covered annually for patients under age 19 and over 64. All patients are covered for clinically required services involving ocular disease, trauma or injury, systemic diseases associated with significant risk to ocular health (e.g. diabetes), and for patients taking certain medications that are associated with significant risk to ocular health.
Alberta	Children under 19 yrs. and adults over 65 yrs. of age are covered for one complete eye exam, partial exam, and single diagnostic procedure per benefit year (July 1 – June 30). Patients between the ages of 19-64 are covered for medically necessary conditions which can include monitoring for diabetes issues, glaucoma and retinal disease, post-operative optometric care for cataract patients, eye infections or injuries, and foreign objects in the eyes.
Saskatchewan	Children and youth under 18 yrs. are covered for one eye exam per 12 months and for repeat and partial exams. For all ages, coverage is provided for initial assessment and follow-up of ocular urgencies and emergencies. Also covered are: supplementary health beneficiaries, Family Health Benefits (FHB) beneficiaries, and seniors (65+) receiving Saskatchewan Income Plan (SIP) supplement.
Manitoba	Children and youth under 19 yrs. and adults over 64 yrs. are insured for one exam every two-year calendar block. Patients between 19 to 64 yrs. are no longer covered, except when medically necessary. Health coverage includes complete and partial eye examinations; full threshold visual fields; tonometry and dilated fundus exam.
Ontario	The Ontario Health Insurance Plan (OHIP) insures the periodic oculo-visual assessment annually for persons under the age of 20 yrs. and over the age of 65 yrs. Persons between the ages of 19 and 65 are eligible for an insured major eye examination either through a requisition from a physician or when presenting with an eye disease or disorder that has been designated as meeting the criteria for an insured service. Insured persons are eligible for insured partial assessments when clinically necessary. An automated visual field test is an insured service for OHIP patient when clinically indicated.
Québec	Coverage is provided for ages 0-17 yrs. and 65 yrs. and over and includes: eye exam, tonometry / biomicroscopy, visual field test, contact lens exam in some circumstances, etc. Dilation of a diabetic patient, or myopic patient of 5.00D and over is covered. Ocular emergency diagnosis is covered for all ages, but treatment is not.
New Brunswick	<i>Healthy Smiles, Clear Vision</i> is a new social development program implemented by the New Brunswick government in September of 2012, to assist children 18 years and under of low income families. This is a three year contract that covers eye examination fees, lenses and glasses. Coverage is also provided to patients of all ages on social assistance. Yearly comprehensive eye examinations are covered for patients with diabetes. There are no other types of provincial health coverage.
Nova Scotia	A Comprehensive Eye Examination (CEE) for routine care is payable once in a two-year period for children under age 10 and those 65 yrs. and older. A CEE is payable once per year for all ages in cases of clinical need, e.g. patients with health conditions (such as diabetes), or on medications, that present a risk to ocular health. Partial examinations are covered up to six times per year for the diagnosis and treatment of ocular infection, allergy or inflammation and the removal of foreign bodies from the eye. Additional coverage exists for keratoconus, low vision assessments, punctual plug insertions and lacrimal dilation and irrigation.
Prince Edward Island	Never insured.
Newfoundland & Labrador	Coverage was fully de-insured in 1991.

For detailed information about provincial coverage and referral protocol, visit opto.ca and click the "Links" button for provincial optometric association contact information.

Reaching New Heights at the AAO in Seattle, WA



New AAO Fellows from Waterloo Drs. Norris Lam, William Ngo and Jill Woods

BY DR. ETTY BITTON & DR. KRISTINE DALTON

Once again the annual AAO meeting surpassed itself by breaking all records. The largest meeting on record with 6006 attendees descended onto Seattle, birthplace of the Starbucks empire and the infamous vibrant Pike Market. Amongst the numerous attendees were 326 from Canada. Student attendance also broke new ground with a record breaking 805 participants. An active participation from both students and faculty of both Canadian schools was evident once again at this year's annual meeting.



STUDENTS

One of the highlights of this year's program, was the vast increase in participation in the student fellowship program. Only two years old, this program offers students a chance to accumulate points by attending different aspects of the AAO program (ie. courses, papers, posters, symposiums, awards ceremonies, volunteering, etc). This allows the student to get an overview of what the AAO has to offer. Nearly 400 students registered for this program, many first timers to the meeting. Students can complete the requirements all in one meeting (most do), or over



Zoe Lacroix, Montreal 3rd yr student, presents her poster on Double Punctum to a group of students

several meetings during the course of their optometric studies. Students completing all requirements receive a certificate and a lapel pin, distinguishing them amongst their peers. Take the time to congratulate them on this accomplishment when you see them wear their pin proudly in the clinic!

Many activities are designed specifically for students. One of these is the student networking luncheon, whereby several student travel scholarships were awarded and where students can receive information on residencies and graduate programs at different institutions. The luncheon attracted close to 800 students this year.

OPTOMETRISTS

As the AAO grows, the choices for attendees continue to expand exponentially. Company sponsored breakfast courses were offered to highlight products, and over 250 continuing education (CE) courses were available. Topic-specific symposia were scattered throughout the program and a robust scientific program with oral presentations (paper sessions), and poster sessions presenting the latest in research and / or clinical case reports were available to all. A variety of workshops and leadership courses were also available for attendees. Nearly all of these events offer CE credits.

FELLOW OF THE AAO

The annual meeting is also when clinicians and researchers can sit for their oral examination to become fellows of the AAO (FAAO). The candidates that have successfully completed the registration process and submitted all the written requirements were invited for a peer-review interview process at the annual meeting. Those that successfully completed this last step obtained their fellowship

and were inducted at the Fellow's banquet (previously called the President's banquet). This year, 244 new Fellows were inducted – another new record for the AAO with individuals from eight countries. Amongst those were 12 Canadians (*Table 1*), including four from the Waterloo School of Optometry (Drs. Norris Lam, William Ngo, Jill Woods, and Shamroze Khan) and three from the École d'Optométrie, Université de Montréal (Drs Claudine Courey, Nicolas Fontaine, and Alexandra Fraser). Congratulations to all!

MAINTENANCE OF FELLOWSHIP

Since 2010, the AAO has introduced a new resolution for the maintenance of the fellowship. In an effort to encourage new FAAO to remain active and continue to be at the forefront of the latest information, a Maintenance of Fellowship (MOF) program was initiated. The MOF program includes elements such as attendance at the annual meeting, presentation of a paper or poster, giving a course, publication of an article in a peer-reviewed journal and more. Each of these elements gives you a point towards the 15 points that are required every 10 years. Practitioners and researchers that have obtained their FAAO prior to 2010 do not need to participate in this program, however all fellows can track their MOF status on the AAO website under "My MOF".

FACULTY

Faculty from both Canadian schools continue to make an impressive contribution at the annual meeting including leadership roles, course presentations, paper and poster presentations representing both clinical and basic vision research as well as receiving recognition for their contributions to the profession. A summary of presentations from each school is included in *Table 2* and *3*. Particular mention this year goes to **Dr. Kathy Dumbleton**, president of the American Optometric Foundation (AOF), who's tireless efforts with FAAO alumni and industry has secured a significant endowment fund that offers over \$300,000 a year in scholarships to optometry students, residents and graduate students to attend the AAO meeting and help support their education and research. Over the past year alone, 26 individuals or couples have joined the AOF's President's Circle with a commitment of \$1000/year for the next 10 years, and a further 10 made a pledge to do so at the meeting in Seattle. The meeting resulted in over \$150,000 in generous donations and new pledges. Approximately 260 supporters attended the Foundation's Celebration Luncheon and the silent auction resulting in over \$20,000 in donations. It is this type of dedication and pride towards the AAO and the AOF that will continue to provide opportunities for so many others.



New AAO Fellows from Montreal; Drs Nicolas Fontaine, Claudine Courey and Alexandra Fraser

Dr. Etty Bitton, chair of the Faculty-Student Liaison Committee welcomed the students at the student fellowship orientation breakfast, the student networking luncheon and presided over the faculty-student liaison meeting. This direct interaction with both faculty and student liaisons from each school has allowed for some new initiatives to continue to improve the faculty and student experience prior to and during the annual meeting as well as to mentor them through the fellowship process.

Contributors to the CE program included Drs Etty Bitton and Langis Michaud (Montreal) and Drs John Flanagan, Lyndon Jones, Susan Leat, Thomas Freddo, Sarah MacIver and Kristine Dalton (Waterloo).

Table 1: New Fellows from Canada

Name	Region
Claudine Courey	Montreal, QC
Candace DeCock	Killarney, BC
Marian Elder	Guelph, ON
Nicolas Fontaine	Montreal, QC
Alexandra Fraser	Montreal, QC
Shamroze Khan	St. Catharines, ON
Norris Lam	Scarborough, ON
Olena Moiseykina	Toronto, ON
William Ngo	Waterloo, ON
Michael S. Petrik	Mission, BC
Lakshmi Thondikulam Easwaran	Camrose, AB
Jill Woods	Waterloo, ON

AWARDS AND SPECIAL RECOGNITION

Several student travel awards continue to be available to partially alleviate some of the costs involved to attend the AAO. These travel awards are often competitive in nature and some require that the student present at the meeting to be eligible. Industry sponsors and the AOF are to be congratulated in their continued efforts to provide travel grants for optometry students, residents and graduate students. Award recipients are detailed below.

Essilor Student Travel Fellowship

Zoe Lacroix and Tania Nguyen (Montreal)
Claudia Lee and Jessica Steen (Waterloo)

Student Travel Fellowship

Dr. Alex Hui – (Frank W. Weymouth Student Travel Fellowship; Waterloo)

Section on Cornea, Contact Lenses & Refractive Technologies-Resident Travel Fellowships

Dr. Anne-Josée Gauthier (Montreal)
Dr. Debby Yeung (Waterloo)

Jill and George Mertz Contact Lens Residency Fellowship

Dr. Claudine Courey (Montreal)

The AAO also honours people who have made significant contributions to optometry. Amongst this year's distinguished honourees were **Dr. Lyndon Jones** (Waterloo) who was awarded the Max Schapero Award from the Cornea and Contact Lens Section for his significant contributions to the advancement of contact lens knowledge. As Director of the Center for Contact Lens Research (CCLR), Dr. Jones continues to lead a team of dedicated researchers and graduate students to expand our understanding of contact lenses and their interactions on the eye.

For his contribution to international optometry, **Dr. George Woo** (previous faculty member at Waterloo and presently Visiting Chair Professor of Optometry and Emeritus Professor at the Hong Kong Polytechnic School of Optometry) was awarded the Essilor Award for Outstanding International Contributions to Optometry for his dedication and leadership in establishing Hong Kong's only optometry program, and for his contributions to the development and expansion of optometry in China and the Pacific Rim and for promoting optometry throughout the world. While at Waterloo, Dr. Woo was the founding director of the Centre for Sight Enhancement and involved in the development of the Low Vision program at the school. Dr Woo's research interests include vision rehabilitation, psychophysics of vision, myopia, contrast sensitivity function, visual optics, vision of the aged and photometry.

We congratulate both honourees for their prestigious awards!

Dr. Doug Benoit (left) along with Dr. Tim Edrington (right) present the Max Schapero Award from the Cornea and Contact Lens Section of the AAO to Dr. Lyndon Jones.



Photo: Courtesy of AAO

Dr. Anthony Cullen, Distinguished Professor Emeritus (Waterloo) was awarded an American Academy of Optometry Life Fellowship Award for his significant contributions to the Academy and in recognition of his years of dedicated service. Congratulations on this honour!

Dr. Maud Gorbet (Waterloo) and **Dr. Mark Willcox** (UNSW, Australia) were this year's recipients of the prestigious American Academy of Optometry Vistakon Research Grant, which was awarded at the AOF celebration luncheon. This year, only one award was given despite a number of excellent applications. Congratulations on this achievement!

Dr. Patrick Simard (Montreal) received honorable mention for the 2013 Ocular Photography Contest for his photo on a haemorrhagic retinal detachment, 24 hrs after head trauma against a shelf. There were 128 image submissions this year. Congratulations on this recognition!

In addition to the awards presented at the American Academy meeting, **Dr. John Flanagan** (Waterloo) was awarded the Optometric Glaucoma Society Distinguished Service award at this year's Optometric Glaucoma Society meeting held just before the Academy. **Dr. Marlee Spafford** (Waterloo) was also recognised with the Dr. Lester Janoff Award for Writing Excellence for the following paper: Spafford, M.M., Iley, M.D., Schultz, A.S.H. & Kennedy, R.D. (2010). Tobacco dependence education in optometry: A Canadian pilot study assessing practices and opportunities.



Photo: Courtesy of AAO

Dr. Bernie Dolan (president of the AAO) Awards Dr. George Woo for his contribution to international optometry

Next year's meeting is scheduled for Nov 12-15, 2014 in the mile high city of Denver, Colorado. Mark your calendar so that we can break new records once more!



Photo: Courtesy of AAO

Dr. Anthony Cullen, (left) was awarded an American Academy of Optometry Life Fellowship Award. (Dr. Bernie Dolan, right)

*Etty Bitton, OD, MSc, FAAO, FBCLA
AAO Faculty-Student Liaison for Montreal and Committee Chair*

*Kristine Dalton, OD, PhD
AAO Faculty-Student Liaison for Waterloo*

Table 2 : Ecole d'optométrie, Université de Montréal participation at the AAO annual meeting, Seattle, 2013

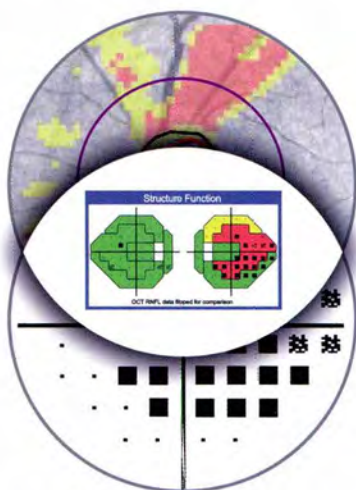
Faculty		
Author (s)	Title of presentation	Type of presentation
Bitton, E, Karpecki P	Not a dry eye in the house	CE Conference
Brulé J, Marcotte S, Moreau MC	Smoking and the eye: what do Quebec teenagers know and fear?	Poster
Brulé J, Tousignant B, Tchang JP	Prevalence of visual impairment and eye disease in Labrousse, Haiti	Poster
Giasson C, Diaconu V	Comparative measurements of contact lens transmittance and signal/noise with and without an integrating sphere	Poster
Chiqui E, Law C, Irving EL, Kergoat MJ, Leclerc BS, Panisset M, Chouinard S, Postuma R, Kergoat H.	Prevalence of visual symptoms linked with convergence insufficiency in Parkinson's disease.	Poster
Michaud, L	How to help a patient who sees too well A case of refractive adaptation (Case Report – Grand Rounds)	CE Conference
Michaud L, Sindt C	How small should a big contact lens be – A debate	CE Conference
Optometry Students		
Author(s)	Title	Type of presentation
Lacroix Zoe, Bitton Etty	Supernumerary punctum: An unusual case of seeing double	Poster
Graduate Students		
Author(s)	Title	Type of presentation
Gauthier AJ, Rivard MM, Michaud L	Comparative Study on the visual and optical performance of a disposable soft lenses	Poster

Table 3 : University of Waterloo, School of Optometry and Vision Science 2013 participation at the AAO annual meeting

AUTHORS	TITLE OF PRESENTATION
FACULTY	
Christian LW, MacIver S	Evaluation of Interprofessional collaboration and Education In Optometry (poster)
Chou BR, Dain SJ, Cheng BB	Effect of UV Exposure on Impact Resistance of Ophthalmic Lenses (poster)
Chou BR, Rosli SA, Hovis JK	Impact resistance of ophthalmic lenses at low temperatures (poster)
Dalton K	Contact lens fitting for sports vision patients (lecture)
Dalton K, Guillon M, Naroo, S	The vision strategy of golf putting (paper)
Dalton K, Guillon M, Naroo, S	The role of ocular dominance in successful golf putting (poster)
Dumbleton K, Richter D, Jones LW, Fonn D	Eye examination frequency and contact lens purchase patterns (poster)
Dumbleton K, Richter D, Woods C, Morgan P, Aakre BM, Jones LW	Wearing and replacement patterns of patients using daily disposable contact lenses (poster)
Flanagan JG, Gaddie IB	Ogs/aaio joint symposium: new approaches to the clinical examination in glaucoma (symposium chair)
Flanagan JG, Lohsberry B	The optic nerve in glaucoma (lecture)
Flanagan JG	Aao/arvo symposium: retinal hemodynamics in macular edema (paper)
Freddo T	Ezell fellows symposium: glaucoma (lecture)
Irving E	Ovs presents: myopia - clinical advances from research (lecture)
Estefania C, Law C, Irving E, Kergoat MJ, Leclerc BS, Panisset M, Chouinard S, Postuma R, Kergoat H	Prevalence of visual symptoms linked with convergence insufficiency in parkinson's disease (poster)
Jones LW	But i always hated chemsistry... (max schapero memorial lecture)
Jones LW	Update on contact lens drug delivery (lecture)
Adams AJ, Bullimore MA, Cotter SA, Jones LW, Carney LG, Manny RE, Mutti DO, Alexander LJ, Twa MD, Zadnik K	Ovs workshop: fundamentals for authors and reviewers (workshop)
Labreche T, Christian LW, Hrynychak P	Student satisfaction with experiential learning in external clinics (poster)
Leat SJ, Krishnamoorthy A, Carbonara A, Rojas-Fernandez C, Gold S	Improving the legibility of prescription medication labels for older adults and adults with visual impairment (poster)
Leat SJ	The low down on falls in older adults and the optometrist's role (lecture)
Leat SJ	Vision in aging sig symposium, co-sponsored with the public health & environmental vision section: "maintaining independence through technology" (symposium chair)

MacIver S	Ellerbrook presents grand rounds ii: clinical utility of sd-oct in solitary choroidal granulomas (lecture)
MacIver S, Lee J, Sherman S	Ultra-widefield autofluorescence imaging reveals subretinal autofluorescence flecks within a rhegmatogenous retinal detachment (poster)
Murphy PJ	A platform to harness the evolving nature of european optometry and optics research and practice (poster)
Zhang J, Situ P, Begley C, Simpson T	The association between ocular surface sensory responses and tear film instability (paper)
Siyu P, Simpson T, Begley C, Chalmers R, Wu Z	Using current symptoms questionnaire to evaluate changes in symptoms induced by different experimental conditions (poster)
Lam D, Richdale K, Chalmers RL, Mitchell GL, Kinoshita BT, Jansen ME, Sorbara L, Wagner H	Repeatability of the contact lens risk survey (poster)
Srinivasan S, Keech A, Keir N, Jones LW	Self vs. Examiner-guided administration of ocular surface disease index (osdi) (paper)
Subbaraman L, Martell E, Heynen M, Ng A, Jones LW	Kinetic activity of lysozyme when exposed to two differing contact lens care systems (paper)
Woods J, Woods C, Fonn D, Jones LW	Potential acceptance of a daily disposable silicone hydrogel multifocal lens in emmetropic presbyopes (poster)
STUDENTS	
Lasby A, MacIver S, Prokopich CL	Thickening of external limiting membrane in central macula: A biomarker for early detection of stargardts retinal dystrophy (poster)
GRADUATE STUDENTS	
Alhassan M, Chou BR, Hovis J	Comparison of associated phoria tests: mkh-haase charts of binocular vision measurements and other commercially available tests (poster)
Althomali MM, Leat SJ	Visual correlates of balance, mobility and fear of falling in older adults (poster)
Cheung S, Lorentz H, Drolle E, Leonenko Z, Jones LW	Contact lens solution efficacy at removing in vitro tear film constituents from silicone hydrogel contact lenses: an atomic force microscopy study (poster)
Hui A, Willcox MDP, Jones LW	In vitro evaluation of antimicrobial activity of novel ciprofloxacin releasing silicone hydrogels (paper)
Otchere H, Sorbara L, Jones LW	Fitting semi-scleral contact lenses using corneal sagittal depth measurements and evaluation of visual acuity and comfort ratings (poster)
RESIDENTS	
Yeung D, Haines L, Sorbara L	Case report: management of aphakia for a toddler population (poster)

The moment you are certain it is glaucoma.
This is the moment we work for.



Structure + Function

ZEISS empowers you to manage the challenges of glaucoma diagnosis:

- Structure and Function Combined Reports
- Guided Progression Analysis™ (GPA™) for both structure and function in the lane
- Patient data and test results at your fingertips

You + ZEISS = Improving Patient Care

Not all products, services or offers are approved or offered in every market and approved labeling and instructions may vary from one country to another. For country specific product information, see your local representative.

Carl Zeiss Canada Ltd. www.zeiss.ca 1-800-387-8037 czcmed@zeiss.com
GLA.5395 © 2013 Carl Zeiss Meditec, Inc. All copyrights reserved.



We make it visible.

Credit and Debit Card Pricing for Members of the Canadian Association of Optometrists



The Canadian
Association of
Optometrists



ZOMARON
merchant services

As the preferred provider of merchant services to the Canadian Association of Optometrists (CAO), **ZOMARON** is pleased to offer you a suite of transaction processing solutions with exclusive rates on VISA, MasterCard and Interac services.

Program Features

- Consolidate your accounts! Process your Visa, MasterCard and Interac Direct Payment with one payment processing provider.
- Deposit all your card transactions directly to the bank of your choice.
- Own your POS terminal from \$24.95/month.
- Low account fee just \$4.95/month
- Your application fee is **WAIVED** – \$299 in savings.
- Class-A Ingenico equipment - the latest Telium lineup of Ingenico terminals available.
- Receive a single monthly statement for your credit and debit processing.
- Powerful web-based reporting included in your monthly fees.



CAO Preferred Base Rate:

Discount Rate	1.54%
---------------	--------------

Plus assessment fees passed through at cost

CAO Preferred Base Rate:

Discount Rate	1.59%
---------------	--------------

Plus assessment fees passed through at cost



Qualified Transactions	
+ Qualified Interchange	at incurred Cost
+ Qualified Transactions Processing Fee	0.05%
Non-Qualified Transactions	
+ Non-Qualified Interchange	at incurred Cost
+ Non-Qualified Transactions Processing Fee	0.25%



Authorizations and Interac Debit: 4.9¢ per transaction

\$500 Guarantee

Lowest POS Processing Cost Guaranteed. If we can't show any Canadian business owner "savings" on their electronic payment processing services, we promise to pay them \$500 (no questions asked).

For more information and to apply, contact **ZOMARON** at
1-888-900-9192 ext. 765 or email CAO@zomaron.com

www.zomaron.com



ACCREDITED
BUSINESS

A
Rating



Visual Status of First Nations Children: The Sagamok First Nation Vision Care Project

BY CATHERINE A CHIARELLI, OD, FFAO*
& A. PAUL CHRIS, OD**

Introduction

It is a commonly held principle that health status and outcomes are tied to various socio-economic factors. These factors, referred to as social determinants of health, such as poverty, unemployment, housing, and level of education, play a significant role in understanding the health issues facing Aboriginal peoples in Canada.

First Nations children living on reserve often receive a lower level of health and medical care than non-Aboriginal children. They have fewer doctor visits, a 20% lower immunization rate and poorer nutritional status,



Dr. Catherine Chiarelli from the Vision Institute of Canada examines a young student from the Sagamok First Nation elementary school.

ABSTRACT

Comprehensive eye examinations were provided to the students of the Sagamok First Nation Biidaaban Kinooaagamik Elementary School in October 2012. Refractive findings indicated a high prevalence of with-the-rule astigmatism which decreased with age and a low prevalence of hyperopia in all age groups. The prevalence of myopia increased with age. Higher rates of amblyopia and strabismus than previously reported in studies of Canadian Aboriginal children were found. Vision correction was provided to all children, where required. A low rate of compliance with spectacle wear was found at follow-up, seven months later.

which increases the risk for upper respiratory tract infections, ear infections, chronic health conditions and obesity.¹ First Nations children suffer higher rates of secondary hearing loss (up to 20%) and are at risk for associated reduced development of language skills, leading to learning and attention deficits.^{1,2}

Access to eye care services also is lower for First Nations children. This often is attributed to the unavailability of eye care providers. However, it also

is due to a lack of knowledge about the types of vision disorders in Aboriginal children and about the important role of vision in general development and learning.²

Prior studies reporting on the prevalence of vision problems in Canadian Aboriginal populations were conducted several decades ago in remote communities and may

* Director of Clinical Services, Vision Institute of Canada

** Executive Director, Vision Institute of Canada

not be representative of current Aboriginal peoples. The refractive status of Indians and Eskimos¹ of the Yukon and Northwest Territories³, Sioux Lookout⁴, Moose Factory Zone⁵ and Belcher Island⁶ has been studied. The prevalence of strabismus and strabismic amblyopia in random population samples in the Canadian North also has been reported.⁷

This study reports on results of the Sagamok First Nation Vision Care Project, a study examining the prevalence of refractive error and other eye/vision conditions in children attending the Sagamok First Nation Biidaaban Kinooamaagamik Elementary School and Day Care. Students were given a comprehensive eye examination, provided

with corrective glasses as needed, and later revisited in follow up to determine the level of compliance with using the prescribed glasses. The results of the study are discussed and then compared against other vision studies involving both Aboriginal children and children from other ethnic groups across North America.

Methods

The Sagamok First Nation is one of 133 First Nation reserves in Ontario and is located on the north shore of Lake Huron between Sudbury and Sault Ste. Marie, Ontario. The nearest optometrists are in the town of Espanola, 40 kilometers to the east. Sagamok is one of 79 First

Nation reserves in Ontario with an on-reserve elementary school. The Sagamok Biidaaban Kinooamaagamik Elementary School is also one of a small number of on-reserve elementary schools that have a native language (Ojibway) immersion program.

Subjects:

All 178 children attending Sagamok Biidaaban Kinooamaagamik Elementary School and Day Care were invited to participate in the study. Consent forms and information packages about the program were given to all the families and 163 consent forms were returned. Due to absences and limitations in clinic scheduling, a total of 146 (73 male, 73 female) children were examined.

(Table 1)

Parents completed a health history questionnaire in advance of the examinations. (Table 2)

Sixty-one percent (61%) of the children who participated had never undergone a previous eye examination, and 84% of preschoolers had no previous eye examination. Ten percent (10%) of the children already wore glasses.

Table 1: Age Range of the Children Examined

Age (years)	2-5	6-10	11-13
Number of Children	43	59	44

Table 2: Health History Profile

	Age 2-5	Age 6-10	Age 11-13	Total
Concern regarding Learning Difficulties	3 (7%)	16 (27%)	15 (34%)	34 (23%)
Allergies	11 (26%)	8 (14%)	6 (14%)	25 (17%)
Asthma		1 (2%)	2 (5%)	3 (2%)
Premature Birth	1 (2%)	7 (12%)	2 (5%)	10 (7%)
Heart Problems	3 (7%)	1 (2%)		4 (3%)
Eczema	1 (2%)			1 (1%)
Developmental Delay	1 (2%)			1 (1%)
ADHD		1 (2%)	1 (2%)	2 (1%)
Thyroid Dysfunction		1 (2%)		1 (1%)
Hemangioma		1 (2%)		1 (1%)
Lazy Eye		2 (3%)	1 (2%)	3 (2%)

- i) The terms Indian and Eskimo were the commonly used names at the time of this 1970's research. Today, the term "Indian" has mostly been replaced by First Nations people and "Eskimo" has been replaced by the name Inuit. The term Aboriginal refers to all First Nations, Métis and Inuit peoples.

Procedure:

A comprehensive eye examination was provided to all children. Monocular and binocular visual acuity was measured (unaided or with the child's current spectacles) at distance and at near. Age-appropriate visual acuity tests were used: Kay Pictures, Lea Symbols, HOTV tests for preschoolers and Snellen (Nidek SC-1700P LCD Acuity Chart) for older children. Unilateral and alternating cover tests were performed at distance and at near. Ocular motility was assessed with the Broad H test. Stereo acuity was assessed with the Titmus Stereo Fly test. Colour vision was assessed in boys with the HRR Pseudo-isochromatic Plates. Pupil reflexes were assessed. Pupillary dilation and cycloplegia was achieved through instillation of a cycloplegic spray (0.5% Cyclopentolate/Tropicamide) or eyedrops

(1 drop 1% Cyclopentolate and 1 drop 1% Tropicamide). Refraction was determined by cycloplegic retinoscopy (after a minimum of 20-25 minutes). Ocular health was assessed through biomicroscopy, fundus biomicroscopy and binocular indirect ophthalmoscopy.

A full examination lane was set up in the community health center adjacent to the school. Examinations were completed during the school day, under the supervision of school and community health center staff. A written report of the findings was completed for each child. In most cases, parents were not present during the examination, but had the opportunity to attend an evening information session to ask any questions about the examination or results. Spectacles were dispensed at the same community health center, two weeks following

the examinations. Corporate supporters of the Vision Institute of Canada provided the glasses at no cost.

Results

Refractive Error:

The refractive findings of all children are reported in *Table 3*.

Binocular Status:

The binocular status of all children is reported in *Table 4*.

Ocular Health Status:

The ocular health status of all children is reported in *Table 5*.

Follow-up:

A follow-up visit was made to Sagamok Biidaaban Kinoomagamik Elementary School seven months later, to review the impact of vision

Table 3: Refractive Error

	Age 2-5 years	Age 6-10 years	Age 11-13 years	Total
Number of Children	43	59	44	146
Myopia (≥ -1.00 D in each principal meridian) in either eye	1 (2%)	4 (7%)	7 (16%)	12 (8%)
Hyperopia ($\geq +2.00$ in each principal meridian) in either eye	0	2 (3%)	0	2 (1%)
Astigmatism (≥ 1.00 D) in either eye	20 (47%)	14 (24%)	7 (16%)	41 (28%)
WR ($180^\circ \pm 30^\circ$ (150° to 30°))	20	13	6	
AR ($90^\circ \pm 30^\circ$ (60° to 120°))	0	1	0	
Oblique (121° to 149° , 31° to 59°)	0	0	1	
Anisometropia (≥ 1.00 D difference in refractive error in principal meridian between two eyes)	4 (9%)	5 (8%)	2 (5%)	11 (8%)
Emmetropia (both eyes) (any refractive error not classified as myopia, hyperopia or astigmatism)	22 (51%)	38 (64%)	30 (68%)	90 (62%)
Spectacles prescribed	8 (19%)	17 (29%)	17 (39%)	42 (29%)

Table 4: Binocular Status

	Age 2-5 years	Age 6-10 years	Age 11-13 years	Total
Number of children	43	59	44	146
Amblyopia (BCVA 20/30 or worse)	2 (5%)	6 (10%)	1 (2%)	9 (6%)
Anisometropic	2	4	0	6 (4%)
Anisometropic/Strabismic			1	1 (0.7%)
Isometropic (bilateral)		2		2 (1.4)
Strabismus (any manifest misalignment of the eyes - constant or intermittent)	1 (2%)	1 (2%)	4 (9%)	6 (4%)
Esotropia			1	
Exotropia	1	1	3	
Phoria (latent misalignment of the eyes)	0	1 (2%)	2 (5%)	3 (2%)
Esophoria (≥ 10 pd)				
Exophoria (≥ 10 pd)		1	1	
Hyperphoria (≥ 10 pd)			1	

Table 5: Ocular Health Status

	Age 2-5 years	Age 6-10 years	Age 11-13 years	Total
Number of children	43	59	44	146
Ocular Health Anomaly:	1 (2%)	6 (10%)	5 (11%)	12 (8%)
Ptosis	1			
Trichiasis		1		
Lid papilloma (squamous cell)		1		
Eyelid nevus		1		
Corneal scar			1	
Pterygium			1	
Allergic conjunctivitis		1		
Glaucoma suspect		2	1	
Chorioretinal scar			1	
Peripheral retinal tear			1	
Colour Vision Deficiency (boys)	2 (9%)	1 (3%)	1 (4%)	4 (5%)

correction on these children. Only one-third of the children for whom glasses were prescribed and dispensed reported using the glasses

on a regular basis. These children reported that glasses allowed them to see better in the classroom and at home. Greatest compliance (100%)

was amongst Senior Kindergarten children. Amongst the children not wearing their glasses, common reasons included poor fit, forgot glasses at home, able to see fine without glasses.

Discussion

The results indicate that the refractive, binocular and ocular health status of our population of First Nation children differs from that reported in other studies involving Aboriginal children and children from other ethnic groups across North America.

Refractive Findings:

With-the-rule (WTR) astigmatism was the most prevalent refractive error in this population of children. The prevalence was highest in pre-schoolers (47%) and decreased with age (24% in 6-10 year-olds, 16% in 11-13 year-olds). A low prevalence of hyperopia (1%) was found across all ages. The prevalence of myopia was found to increase with age (1% in 2-5 year-olds, 7% in 6-10 year-olds, 16% in 11-13 year-olds). These findings are compared to those of prior studies reporting on the refractive status of Canadian Aboriginal children.

The Indian children of the Sioux Lookout Zone of Northwestern Ontario demonstrated a higher prevalence of astigmatism, which also was observed to decrease with age (43% in 0-9 year-olds; 33% in 10-19 year-olds).⁴ The Indian and Eskimo children of the Yukon and Northwest Territories demonstrated differing prevalence of astigmatism:



The children at the elementary school were delightful and cooperative patients and were excited to have their eyes examined.

38.4% in Eskimos and 74.5% in Indians across all age ranges. The axis of astigmatism was not specified. A genetic or environmental factor influencing the development of astigmatism in Indians was suggested, to explain this finding.³ The Belcher Island Eskimo children demonstrated a low prevalence of (mostly WTR) astigmatism (8-9%).⁶

A low prevalence of hyperopia (1%) was reported in the Sioux Lookout Zone Indian children,⁴ similar to our findings. In contrast to our findings, however, prior studies have reported myopia to be the most prevalent refractive error in Canadian Aboriginal children. The Sioux Lookout Zone study found myopia in 37% of the Indian children (0-19 years old).⁴ The Yukon/Northwest Territories study found myopia in 20% of the Indian and Eskimo children at age 10 years.³ Recently, Sharma et al. also presented data indicating a higher

incidence of myopia in First Nations and Métis children (median age 6.48 years) compared to non-Aboriginal children (median age 6.69 years).⁸ The Belcher Island Eskimo children, however, demonstrated a lower prevalence of myopia (7%) across all ages.⁶

The refractive status of America's Native Indians has been studied extensively.

A high prevalence of WTR astigmatism (42-78%) has been reported in Tohono O'odham and Navajo American Indian children.^{9 10 11 12 13 14} This is much higher than reported in our First Nations population. A higher degree of Native American Indian ancestry has been identified as a risk factor for WTR astigmatism.¹⁵ Maples et al. reported the prevalence of astigmatism to decrease with age (as in our population), leveling off after age 10 years. This is thought to be related to a flattening of the vertical corneal

meridian.¹³ Other studies, however, have shown no relation between age and astigmatism in this population.^{9 11 12} Increasing myopia between 6 and 18 years of age also is reported in Navajo Indian children.¹³

Comparisons also can be made with the Baltimore Pediatric Eye Disease Study (BPEDS), Multi-Ethnic Pediatric Eye Disease Study (MEPEDS) and Collaborative Longitudinal Evaluation of Ethnicity and Refractive Error (CLEERE) Study, which have established normative refractive data for children of different ethnicities.^{16, 17, 18, 19} While these studies used slightly different age groupings and limits to define hyperopia, myopia and astigmatism, their results serve a useful comparison to our population.

Higher rates of astigmatism were reported in Hispanic children (13% in 2-6 year olds; 37% in 5-17 year olds) and Asian children (33% of 5-17 year olds). Lower rates of astigmatism were reported in African American and Caucasian children (10-13% of 2-6 year olds; 20-26% of 5-17 year olds). WTR astigmatism orientation was more common in all children.^{16 17 18 19} Our population demonstrated a higher prevalence of astigmatism in the preschool age group than has been reported in these other ethnicities. The rate decreases with age, and is similar to that of Caucasian and African American children in the older age groups. This is in contrast to Hispanic children, who have a higher prevalence of astigmatism (greater than our First Nations children) in the older age groups.

Caucasian and Hispanic children demonstrate a higher prevalence of hyperopia (25-33% in 2-6 year olds; 12-19% in 5-17 year olds) than do African American children (15-24% in 2-6 year olds; 6% in 5-17 year olds) and Asian children (6% in 5-17 year olds).^{16 17 18 19} Our finding of a very low prevalence of hyperopia may partially reflect the level at which the criterion for hyperopia was set (greater than or equal to two diopters in each principal meridian).

Caucasian children demonstrate a low prevalence of myopia (less than 2% in 2-6 year olds, 4% in 5-17 year olds). African American children also demonstrate a low prevalence of myopia (approximately 6%) that is consistent at all ages. Older Hispanic and Asian children demonstrate a higher prevalence of myopia (13-18% in 5-17 year olds).^{16 17 18 19} The rate of myopia in the older subgroups of our First Nations children approaches these higher levels.

BPEDS reported a rate of anisometropia of 8-10% (equal in Caucasian and African American children),¹⁶ which is equal to the rate found in our population.

Binocular Status:

The overall prevalence of amblyopia in our population of First Nations children was 6% (4% anisometropic, 1.4% mixed strabismic/anisometropic and 0.7% isometropic/bilateral). This is greater than the 1% prevalence rate previously reported in Canadian Aboriginal children.^{4,7}

Our finding indicates a much lower prevalence of amblyopia than has been reported in astigmatic Tohono O'odham American Indian children. In children under 10 years of age, 43-58% of those with hyperopic astigmatism and 67-74% of those with mixed/myopic astigmatism demonstrated best-corrected acuity of 20/40 or worse.²⁰

MEPEDS reported an interocular acuity difference in approximately 3% of Caucasian and African American children and in 6.7% of Hispanic children (2-6 years old). A bilateral decrease in acuity was found in less than 1% of Caucasian children and in 1.5% of African American and Hispanic Children.²¹ The amblyopia found in our population would appear to be most consistent with that of Hispanic children.

The overall prevalence of strabismus was 4% in the children we examined. This is consistent with that reported in the children of Sioux Lookout Zone.⁴ Exotropia (3%) was more common than esotropia (0.7%) in our population. Wyatt and Boyd also reported a greater prevalence of exotropia than esotropia in older children, however they found a lower overall prevalence of strabismus (2-2.5%) in northern Canadian Eskimo and Indian children.⁷

MEPEDS and BPEDS reported strabismus rates of less than 2% each for esotropia and exotropia, in children 2-6 years of age. This was similar amongst ethnic groups, including Caucasian, African American and Hispanic children.²² The results

for the younger children we examined are consistent with this finding.

Ocular Health:

The overall prevalence of ocular health anomalies was low in our population. Most anomalies were benign and did not require treatment. Three children were identified as glaucoma suspects due to large optic nerve cupping, and were scheduled for appropriate follow-up and monitoring with local optometrists. One child was referred to an ophthalmologist on an urgent basis, for treatment of a peripheral retinal tear.

Previous studies of Canadian Aboriginal peoples have reported on ocular health anomalies in adults, but not children. Prevalence range from 10-21% is reported. The most common conditions reported were pinguecula, pterygium, cataract, blepharitis, retinal disease, corneal scarring.^{4,6}

Today's First Nations people are identified as being at high risk for diabetes and other chronic health diseases. Ocular manifestations of such diseases were not observed in the children we examined.

Follow-Up:

Most of the children were non-compliant with wearing glasses as prescribed. We predict that compliance could be improved through greater parent involvement at the time of the examination and/or spectacle dispensing. A greater understanding by parents as to the nature of their child's vision problem and the importance of vision correction likely would improve

motivation to follow-through with the recommended treatment.

Compliance also could be improved by assigning a school staff member to monitor the children's compliance with spectacle wear. This person could assist with developing strategies such as keeping the glasses at school so that they are always available for use in the classroom, verifying spectacle wear on a daily basis (in a manner similar to taking attendance), establishing rewards for consistent spectacle wear and/or consequences for lapses in compliance. The high rate of spectacle compliance observed with the Senior Kindergarten class can be attributed to the class teacher who was actively involved in encouraging the children to wear their glasses.

Conclusions

This clinical study of First Nations school children showed a high prevalence of WTR astigmatism that decreased across the three age groups studied. The prevalence of myopia increased with age. A low prevalence of hyperopia was seen at all age levels. Overall, 29% of the children required spectacle correction. We found higher rates of amblyopia and strabismus than have been reported in previous studies of Canadian Aboriginal children. The prevalence of amblyopia in our population also was higher than that reported in Caucasian and African American preschoolers. Poor compliance with spectacle wear and follow-up visits was observed.

These results highlight the

importance of comprehensive eye examinations for First Nations children. Education programs directed towards Aboriginal peoples regarding vision problems and eye care are needed. Community supports to improve compliance with treatment regimens must be developed.

One strength of our study is that it involves a community vs. clinic-based population. Over 80% of children in the Sagamok Biidaaban Kinoomaagamik Elementary School were examined, including many who had no presenting concerns or complaints. The use of cycloplegic retinoscopy is another strength, since this allowed stable, objective assessment of refraction in all children. A further strength of this study was to involve the nearest optometrists in order to improve follow-up care and to establish ongoing relationships with the community health team.

The limitations of our study include its small sample size and the fact that it was not a longitudinal study. As a result, the significance of a decrease in prevalence of astigmatism with age is difficult to determine.

Acknowledgements

We would like to thank Drs. Josee Labrecque, Teri Fisher, and Charles Booth from Espanola, Ontario for their help in providing eye exams to the children of the Sagamok elementary school, and Ms. Crystal Gagne (from the office of Dr. Labrecque) for assisting with the spectacle dispensing services to the children. We would also like to thank Centennial Optical for donating the eyeglass frames,

Essilor Canada for providing the lenses and lab work, and Innova Medical for providing the eye exam instruments and equipment. Special thanks also to Mr. Tony Jocko, Federal Health Policy Analyst for the Union of Ontario Indians and Mr. Eric Martin, Health Program Manager, Sagamok First Nation.

References

1. Macaulay AC. Commentary: Improving aboriginal health. How can health care professionals contribute? *Canadian Family Physician*. 2009;55:334-336.
2. Atkinson DL. Aboriginal preschool vision screening in BC - closing the health gap. *Canadian Journal of Optometry*. 2010;72(4):17-24.
3. Morgan R, Munro M. Refractive problems in Northern natives. *Can J Ophthalmol*. 1973;8(2):226-8.
4. Boniuk V. Refractive problems in native peoples (the Sioux Lookout Project). *Can J Ophthalmol*. 1973;8(2):229-33.
5. Woodruff M, Samek M. A study of the prevalence of spherical equivalent refractive states and anisometropia in Amerind populations in Ontario. *Can J Public Health*. 1977;68(5):414-24.
6. Woodruff M, Samek M. The refractive status of Belcher Island Eskimos. *Can J Public Health*. 1976;67(4):314-20.
7. Wyatt H, Boyd T. Strabismus and strabismic amblyopia in Northern Canada. *Can J Ophthalmol*. 1973;8(2):244-51.
8. Sharma N, Post J, Pahwa P, Erraguntla V. Follow-up eye care a major concern in *Canadian Aboriginal pediatric population*; 2011.
9. Harvey EM, Dobson V, Miller JM. Prevalence of High Astigmatism, Eyeglass Wear, and Poor Visual Acuity Among Native American Grade School Children. *Optometry and vision science: official publication of the American Academy of Optometry*. 2006;83(4):206-212.
10. Miller JM, Dobson V, Harvey EM, Sherrill DL. Astigmatism and Amblyopia among Native American Children (AANAC): design and methods. *Ophthalmic Epidemiology*. 2000;7(3):187-208.

11. Harvey EM, Dobson V, Miller JM, et al. Prevalence of corneal astigmatism in Tohono O'odham Native American children 6 months to 8 years of age. *Investigative ophthalmology & visual science*. 2011;52(7):4350-5.
12. Harvey EM, Dobson V, Clifford-Donaldson CE, Green TK, Messer DH, Miller JM. Prevalence of astigmatism in Native American infants and children. *Optometry and vision science: official publication of the American Academy of Optometry*. 2010;87(6):400-5.
13. Maples W, Atchley J, Hughes J. Refractive profile of navajo children. *Journal of Behavioral Optometry*. 1996;7(3):59-64.
14. Miller JM, Dobson V, Harvey EM, Sherrill DL. Comparison of preschool vision screening methods in a population with a high prevalence of astigmatism. *Investigative ophthalmology & visual science*. 2001;42(5):917-24.
15. Goss D. Meridional Analysis of With the Rule Astigmatism in Oklahoma Indians. *Optometry and vision science: official publication of the American Academy of Optometry*. 1989;66(5):281-87.
16. Giordano L, Friedman DS, Repka MX, et al. Prevalence of refractive error among preschool children in an urban population: the Baltimore Pediatric Eye Disease Study. *Ophthalmology*. 2009;116(4):739-46, 746.e1-4.
17. Kleinstein RN, Jones LA, Hullett S, et al. Refractive Error and Ethnicity in Children. *Archives of ophthalmology*. 2003;56(8):1141-1147.
18. Fozailoff A, Tarczy-Hornoch K, Cotter S, et al. Prevalence of astigmatism in 6- to 72-month-old African American and Hispanic children: the Multi-ethnic Pediatric Eye Disease Study. *Ophthalmology*. 2011;118(2):284-93.
19. Multi-Ethnic Pediatric Eye Disease Study Group. Prevalence of myopia and hyperopia in 6- to 72-month-old african american and Hispanic children: the multi-ethnic pediatric eye disease study. *Ophthalmology*. 2010;117(1):140-147.
20. Harvey EM, Dobson V, Miller JM, Clifford-Donaldson CE. Amblyopia in Astigmatic Children: Patterns of Deficits. *Vision research*. 2007;47(3):315-326.
21. Tarczy-Hornoch K, Varma R, Cotter S a, et al. Risk factors for decreased visual acuity in preschool children: the multi-ethnic pediatric eye disease and Baltimore pediatric eye disease studies. *Ophthalmology*. 2011;118(11):2262-73.
22. Cotter S a, Varma R, Tarczy-Hornoch K, et al. Risk factors associated with childhood strabismus: the multi-ethnic pediatric eye disease and Baltimore pediatric eye disease studies. *Ophthalmology*. 2011;118(11):2251-61.

La version française de cet article suivra dans le prochain numéro de la RCO.

Children and Their Vision – What Parents and Teachers Need to Know

A child's visual milestones

How well does your baby see? It is difficult to know how well a child sees early in life. Because infants and young children can't tell us about seeing difficulties, parents must watch a child's behaviour for early signs of vision problems. Reaching the following visual milestones on time is very important to a child's general development and school readiness, and to their life-long vision skills.

From birth to 1 month	1 to 3 months	3 to 5 months	5 to 7 months	7 to 12 months	12 to 18 months	18 months to 2 years	2 to 3 years	4 to 5 years
A baby should soon begin to watch things as they move. At 1 month, a baby should be able to follow a moving object with their eyes. They should also be able to track a moving object with their head.	A baby will begin to watch things as they move. At 1 month, a baby should be able to follow a moving object with their eyes. They should also be able to track a moving object with their head.	Many visual skills begin to develop. These include looking, observing, focusing, and seeing. At 3 months, a baby should be able to follow a moving object with their eyes. They should also be able to track a moving object with their head.	A baby should be able to follow a moving object with their eyes. They should also be able to track a moving object with their head. At 5 months, a baby should be able to follow a moving object with their eyes. They should also be able to track a moving object with their head.	Many visual skills are fully developed by 12 months. A baby should be able to follow a moving object with their eyes. They should also be able to track a moving object with their head.	By 12 to 18 months, a baby should be able to follow a moving object with their eyes. They should also be able to track a moving object with their head.	Between 18 months and 2 years, a child should be able to follow a moving object with their eyes. They should also be able to track a moving object with their head.	By 2 to 3 years, a child should be able to follow a moving object with their eyes. They should also be able to track a moving object with their head.	At 4 to 5 years, a child should be able to follow a moving object with their eyes. They should also be able to track a moving object with their head.

The Vision Institute of Canada, in partnership with the National Collaborating Centre for Aboriginal Health, has created a 16 page booklet titled: "Children and Their Vision – What parents and teachers need to know." This culturally relevant booklet will be made available to Aboriginal (First Nations and Inuit) schools, community health centres and other Aboriginal health care organizations. This is an excerpt on "A child's visual milestones" from that booklet. The complete booklet can be viewed and downloaded from the Vision Institute at: <http://www.visioninstitute.optometry.net>

Valsalva Retinopathy in the Third Trimester of Pregnancy

BY DEREK MACDONALD, OD, FAAO

Case Details

MD, a 24-year old female of African descent, presented upon urgent referral from her family physician with an 18-hour history of a single central floater in her left eye not accompanied by pain or photopsia. A vague occipital headache was reported. There was no history of trauma. Her general health was good, and no systemic medications were being taken. However, MD was in her third trimester of pregnancy, and reported an episode of violent vomiting immediately preceding the onset of symptoms.

Entering unaided visual acuities were 6/7.5+ in the right, 6/7.5- in the left. Ocular motility was full.

Confrontation visual field assessment was full to finger counting in both right and left. Pupil reactions were normal with no afferent defect. Anterior segment evaluation was unremarkable; there was no neovascularization. Intraocular pressures were 12 and 13, right and left respectively, at 10:00 a.m.

Dilated retinal examination of the pole and periphery (using

my standard protocol of 0.5% tropicamide followed by 60 seconds of gentle eyelid closure) was unremarkable in the right eye (*Figure 1*). In the left, a predominantly inferior-central vitreous hemorrhage (VH) with several superior 'streamers' was noted (*Figure 2*). There was no obvious neovascular process, or macular or peripheral retinal anomaly.



Figure 1— healthy posterior pole, right eye



Figure 2— Valsalva retinopathy, left eye

ABSTRACT | RÉSUMÉ

MD, a 24-year old female of African descent in her third trimester of pregnancy, presented upon referral from her family physician with an 18-hour history of dark floating spot in her left eye. Her history was significant for violent vomiting immediately preceding the onset of visual symptoms. General and ocular health history was otherwise unremarkable. Clinical examination showed central vitreous hemorrhaging in the absence of any other ophthalmic anomaly, consistent with a diagnosis of Valsalva retinopathy. Over the subsequent several months, which included the uncomplicated birth of her healthy child, the hemorrhaging resolved without sequelae.

Keywords: Valsalva maneuver, Valsalva retinopathy, hyaloidotomy, Terson's syndrome, Purtscher retinopathy

MD, femme de 24 ans de descendance africaine qui en est au troisième trimestre de sa grossesse, se présente recommandée par son médecin de famille en se plaignant d'avoir un point flottant noir depuis 18 heures dans l'œil gauche. Comme antécédents importants, elle a vomi violemment juste avant l'apparition des symptômes visuels. Ses antécédents relatifs à la santé générale et oculovisuelle ne présentent autrement rien de remarquable. L'examen clinique révèle une hémorragie au centre du vitré et aucune autre anomalie ophtalmique, ce qui concorde avec un diagnostic de rétinopathie de Valsalva. Au cours des mois qui suivent, qui ont inclus la naissance sans complication de son enfant en bonne santé, l'hémorragie s'est résorbée sans laisser de séquelles.

Mots clés : Manœuvre de Valsalva, rétinopathie de Valsalva, hyaloidotomie, syndrome de Terson, rétinopathie de Purtscher

Given that the patient had been examined by her family physician earlier the same day, systemic blood pressure was not reassessed. In the absence of posterior vitreous detachment (PVD) and contributing systemic and/or ophthalmic disease a working diagnosis of Valsalva retinopathy was established. A report was forwarded to the family physician suggesting further investigation for systemic vasculopathies including hypertension and blood dyscrasias. No reply was received.

At follow-up in two weeks MD noted a smaller more peripheral spot in the left eye not accompanied by pain or photopsia. Unaided acuities were 6/6 in the right, 6/6- in the left. Confrontation visual field assessment remained full; pupil reflexes remained normal with no afferent defect.

Dilated retinal examination revealed significant resolution of the VH, with some 'greying' of the remaining blood (*Figure 3*). The macula and peripheral retina remained unremarkable.

As the patient was approaching her due date, further follow-up was scheduled for three months, and an update was forwarded to the family physician.

Four months following the onset of her symptoms, MD reported a small persistent floater in the left eye. No exacerbation of her symptoms had occurred during the uncomplicated vaginal birth of her healthy child 9 weeks earlier. Unaided acuities remained 6/6 in the right, 6/6- in the left. Confrontation visual field assessment remained full; pupil reflexes



Figure 3 – two weeks post-presentation, Valsalva retinopathy, left eye



Figure 5 – healthy posterior pole, right eye

remained normal with no afferent defect.

Dilated retinal examination revealed essentially complete resolution of the VH in the left eye (*Figure 4*). The macula and peripheral retina remained unremarkable. An update was forwarded to the family physician.

Thirteen months following onset of her symptoms, MD noted no floater, eye pain, or photopsia in either eye, but slight near strain and occasional headache. Best-corrected acuities were 6/6 in both right and left (O.D. +1.25-0.25×180; O.S. +1.00-0.25×180). Binocular vision assessment indicated a 4Δ



Figure 4 – four months post-presentation, Valsalva retinopathy, left eye

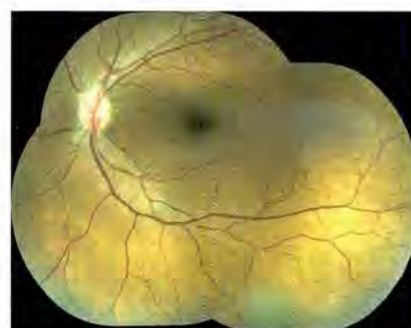


Figure 6 – 13 months post-presentation, Valsalva retinopathy, left eye

near exophoria. Motility was full. Confrontation visual field assessment remained full; pupil reflexes remained normal with no afferent defect. Anterior segment examination was unremarkable. Intraocular pressures were 11 and 13, right and left respectively, at 4:40 p.m.

Dilated retinal examination revealed no anomalies of the pole or periphery of the right eye (*Figure 5*). The left pole and peripheral retina were unremarkable, while the inferior vitreous showed trace hazing consistent with resorbed VH (*Figure 6*).

Annual comprehensive examinations were recommended.

Discussion

The Valsalva maneuver, named for the Italian anatomist who first investigated it in the 17th century, is defined as forcible exhalation effort against a closed glottis causing a sudden and significant increase in intrathoracic pressure.¹ The resulting compression of the thoracic vena cava causes an increase in intravenous pressure that interferes with venous return to the heart.² Given that veins above (rostral to) the heart have no valves, relying primarily upon gravity for venous return, this elevated pressure is readily transferred to the ophthalmic venous system. Intravenous pressure, if elevated to a level of 100 mmHg or more, can damage ophthalmic capillaries, causing hemorrhaging.^{3,4} A history of recent Valsalva maneuver is helpful in establishing a diagnosis: vigorous sexual activity, heavy lifting, constipation, roller-coaster riding, childbirth, sneezing, exercise, dancing, gastroenteroscopy, pneumoencephalography, trauma, cardiopulmonary resuscitation, oratorical contests, riding a motorcycle, bungee jumping, and inflating balloons are among a host of interesting and diverse causes.⁵⁻¹⁹

Hemorrhages can be unilateral or bilateral, single or multiple, of varying shape, and in a number of ocular structures, including the periocular skin, subconjunctival and suprachoroidal spaces, and perifoveal retina.²⁰⁻²² The precise location of a retinal hemorrhage (sub-internal limiting membrane (ILM) versus subhyaloid) can be

difficult to determine through ophthalmoscopy, although sub-ILM hemorrhages tend to be more immobile. In the presence of a posterior vitreous detachment (PVD), the initial hemorrhage typically occupies the sub-ILM space, given that there is no attached hyaloid membrane to confine the blood. Hemorrhaging initially occupying the sub-ILM space may pass through ILM breaches into the subhyaloid space, and subsequently through the posterior hyaloid face to involve the vitreous itself.²³⁻²⁵ Intravenous fluorescein angiography (IVFA) will show blocked fluorescence in the area of the hemorrhage. Optical coherence tomography (OCT) allows more precise localization of intraocular hemorrhaging, and has revealed the potential for preretinal membrane (PRM) formation. PRM are histologically similar to the glial tissue of epiretinal membranes (ERM), but contain blood degradation products and are not adherent to the underlying retinal surface.²⁶

Symptoms depend upon both the severity and location of the hemorrhaging. When the visual axis is involved, vision can be significantly impaired.²⁷ Given that small extrafoveal hemorrhages may be minimally symptomatic, Valsalva retinopathy is likely under-reported. Fortunately, most cases resolve spontaneously over several weeks to months of observation, with vision often improving to normal or near normal, as was the case with patient MD.

Permanent visual impairment may result from macular pigmentary alterations, fibrotic ERM/

PRM formation, or toxic retinal damage secondary to prolonged exposure to blood, hemoglobin, and/or iron, in increasing order of toxicity.^{28,29} Large sub-ILM or subhyaloid hemorrhages not resolving spontaneously may be evacuated into the vitreous space by performing a posterior vitreous hyaloidotomy using the Nd:YAG laser.^{30,31} This treatment allows clearing of persistent hemorrhage and commensurate improvement in acuity within 14 to 28 days in up to 90% of cases, versus a mean of nearly 50 days for patients simply observed.^{32,33} Given that patients with Valsalva retinopathy are often healthy young adults who respond particularly well to this treatment providing that the blood has not started to clot, a speedy visual recovery is certainly desirable.^{34,35} That being said, hyaloidotomy is not without potential iatrogenic complications including peripheral retinal break, macular hole, ILM wrinkling, and ERM formation.³⁶ It is, however, less invasive than vitrectomy, and greatly reduces the risk of potentially devastating infectious complications. Subsequently or alternatively, vitrectomy may still be necessary in cases of severe or slowly resolving vitreous hemorrhage (VH). Following vitrectomy, residual sub-ILM hemorrhage may be released through ILM peel, or laser membranotomy.³⁷ Subsequent histological evaluation has shown excised ILM to be convoluted and anomalous, containing atypical cellular and blood degradation components. An element of inflammatory 'proliferative vitreoretinopathy-like'

damage may be responsible for some cases of poor post-event vision, supporting earlier and more aggressive intervention.

Pregnancy has been identified as a predisposing factor in the development of Valsalva retinopathy.^{38,39} Pregnancy-induced hormonal, immunologic, metabolic, and hematologic changes including thrombocytopenia can increase the likelihood of both Valsalva maneuver and retinopathy. Constipation and nausea, known triggers of Valsalva maneuver, frequently accompany pregnancy. Elevation of intra-abdominal pressure secondary to uterine expansion can significantly increase 'baseline' intravenous pressure, exacerbating any further increase occurring during labor and delivery. There are, however, no reports detailing recurrent Valsalva retinopathy following vaginal delivery, making additional accommodation unnecessary. Retinal hemorrhaging has been reported in association with both epidural anesthesia, typically required for elective Caesarean section, and general anesthesia. Both trigger an increase in venous pressure, and the latter may induce Valsalva maneuver during extubation.⁴⁰

Intraocular hemorrhaging in newborns was first described in 1861, only eleven years after the introduction of the ophthalmoscope, and has subsequently been reported in up to 40% of vaginal, but only a small fraction of Caesarean deliveries.^{41,42} Trauma during and following delivery is an important consideration: it has been argued that infants are unable to

self-generate the increase in intrathoracic pressure required to trigger Valsalva retinopathy.⁴³ Consequently and unfortunately, abusive head trauma (AHT, 'shaken baby syndrome') must be included in the differential diagnosis for infants and young children presenting with intraocular hemorrhaging, particularly when hemorrhaging is bilateral and involves multiple retinal layers through the entirety of the fundus, suggesting repetitive acceleration/deceleration injury.⁴⁴

While Duane originally postulated that faulty retinal capillaries were responsible for Valsalva retinopathy, the prevalence of this condition in healthy young adults would suggest otherwise.⁴⁵ In fact, the debate as to whether ruptured capillaries are abnormal or healthy has largely been resolved in favor of the latter, with most arguing that, by definition, Valsalva retinopathy occurs in the absence of concurrent ocular or systemic disease. However, it can be exacerbated by retinal vascular anomalies, systemic medications, hemorrhagic fevers, and blood dyscrasias.⁴⁶⁻⁴⁸ Coagulability is a particularly important consideration: pertinent to this case, some maintain that any patient of African descent who presents with intraocular bleeding has sickle-cell disease until proven otherwise. Systemic hypertension, retinal vein occlusion, and diabetes, particularly proliferative disease, are important considerations in the differential diagnosis. Severe anemia, leukemia, and chronic alcoholism have also been implicated as risk factors for intraocular hemorrhage.

Particular care must be taken to consider potentially life-threatening diagnoses, including Terson's syndrome and Purtscher retinopathy.^{49,51}

First reported in 1900, Terson's syndrome is characterized by the presence of subhyaloid and/or vitreous hemorrhage secondary to intracranial subarachnoid hemorrhage (SAH).⁵² This condition is found more frequently in women, consistent with the gender difference in prevalence of aneurysmal SAH. Intraocular hemorrhaging is bilateral in approximately 50% of cases, but often asymmetric. While intracranial hemorrhage itself can be life threatening, the presence of concurrent VH, found in up to 40% of cases but likely underdiagnosed, is associated with a 4.8× increased mortality risk and more guarded outcome should the patient survive. It was originally hypothesized that the intraocular blood was subarachnoid blood transmitted through the optic nerve sheath. However, it is now believed that VH results from venous stasis and subsequent intraocular vessel rupture caused by acutely elevated intracranial pressure (ICP).⁵³ Ocular complications may include macular hole and retinal detachment, although the prognosis for visual recovery in surviving patients is surprisingly good.⁵⁴ Patients with Terson's syndrome frequently complain of 'thunderclap headache' and subsequently present to the emergency room comatose secondary to dramatically elevated ICP.⁵⁵

Purtscher retinopathy, initially described in 1910, is an occlusive microvasculopathy (traumatic retinal angiopathy) characterized by cotton wool spots, multiple retinal hemor-

rhages, and Purtscher flecken.⁵⁶ The latter, polygonal areas of inner-layer retinal whitening thought to be capillary bed infarcts between arterioles and venules surrounded by an adjacent clear zone, are pathognomonic but not universal.⁵⁷ Retinal lesions are localized to the posterior pole following compressive injuries to the trunk and/or long bone fracture or crush, and are bilateral in up to 60% of cases.⁵⁸ 'Purtscher-like' (non-traumatic) retinopathy has been reported secondary to acute pancreatitis, orthopedic surgery, renal failure, and childbirth.^{59,60} In all etiologies, the pathogenesis is felt to be microembolism of fat, air, fibrin clots, and/or amniotic materials, or complement-mediated leukocyte aggregation. The peripapillary capillary network has relatively few arteriolar feeds, making it uniquely susceptible to embolic obstruction. Presenting visual acuity may be 6/60 or less with central scotoma; visual symptoms are delayed up to 48 hours post-illness or -trauma.⁶¹ Spontaneous visual recovery to the level of 6/12 or better occurs within weeks to several months in the majority of cases, although dramatically reduced presenting acuity due to involvement of the macular arteriolar network is a poor prognostic indicator. There is no proven treatment: the use of systemic steroidal and non-steroidal anti-inflammatory agents is variably effective in improving ultimate visual recovery.⁶²

From a biomechanical perspective, the causative force in Purtscher retinopathy is centrifugal (anterior/posterior), whereas that in Valsalva

retinopathy is centripetal (superior/inferior).⁶³ As such, concurrent Purtscher and Valsalva retinopathy is rare, although possible in instances of severe chest trauma. In neither condition is direct ocular trauma an etiologic factor.

Conclusion

Valsalva retinopathy may be precipitated by a number of very diverse causes, including pregnancy. Fortunately, spontaneous resolution with recovery of normal or near normal vision is the rule in the majority of cases. Unequivocal evidence of antecedent Valsalva maneuver is helpful in establishing the diagnosis. In its absence, differential diagnosis is critical, particularly in light of the potentially devastating consequences of other etiologies of intraocular hemorrhage. Ophthalmic considerations include but are not limited to Terson's syndrome, Purtscher retinopathy, and proliferative diabetic retinopathy; contributing systemic vasculopathies include but are not limited to anemia and leukemia. If concurrent retinal pathology is suspected, or more rapid clearing of the visual axis is necessary, laser hyaloidotomy and/or vitrectomy may be considered. Once Valsalva retinopathy has resolved, given its unique etiology and self-limiting course, follow-up is typically through regular comprehensive eye examinations.

References

1. Al-Mujaini AS, Montana CC. Valsalva retinopathy in pregnancy: a case report. *Journal of Medical Case Reports* 2008;2:101-3.
2. Choi S, et al. Valsalva retinopathy associated with fiberoptic gastroenteroscopy. *Can J Ophthalmol* 2006;41:491-3.
3. AhmadAbadi MN, et al. Premacular hemorrhage in Valsalva retinopathy: a study of 21 cases. *Iranian J Ophthalmol* 2009;21(3):11-16.
4. Van Rens E. Traumatic ocular haemorrhage related to bungee jumping. *Br J Ophthalmol* 1994;78(12):948.
5. Hassan M, Tajunisah I. Valsalva haemorrhagic retinopathy after push-ups. *Lancet* 2011;377:504.
6. Sueke H. Valsalva retinopathy induced by vigorous nightclub dancing. *MJA* 2009;190(6):333.
7. Mosely IF, Pilling JB. Intraocular haemorrhage as a complication of pneumoencephalography. *J Neurol Neurosurg Psychiatry* 1976;39:375-380.
8. Callender D, et al. Valsalva haemorrhagic retinopathy in a pregnant woman. *Eye* 1995;9:808-9.
9. Sharma S. Ophthalmic problem - Valsalva retinopathy. *Canadian Family Physician* 1998;44:2643,2651-2.
10. Tabatabaee SA, et al. Purtscher retinopathy associated with Valsalva retinopathy after accident. *Iranian J Ophthalmol* 2009;21(1):70-72.
11. Cameron JR, et al. Vitreous haemorrhage following cardiopulmonary resuscitation. *Eye* 2006;20:1317-19.
12. Jim JY, et al. Valsalva retinopathy associated with an oratorical contest. *Korean J Ophthalmol* 2009;23:318-20.
13. Ioannidis AS, et al. Valsalva retinopathy associated with riding a motorcycle. *Eye* 2004;18:329-31.
14. Lee TY, Chang WH. A case of Valsalva retinopathy associated with straining at stool. *Yeungnam Univ J Med* 2006;23(2):227-31.
15. Chan J. Ophthalmic complications after bungee jumping. *Br J Ophthalmol* 1994;78:239.
16. Friberg TR, et al. Sudden visual loss associated with sexual activity. *Arch Ophthalmol* 1995;113(6):738-42.
17. Roberts DK, MacKay KA. Microhemorrhagic maculopathy associated with aerobic exercise. *J Am Optom Assoc* 1987;58(5):415-8.
18. Georgiou T. Valsalva retinopathy associated with blowing balloons. *Eye* 1999;13(5):686-7.

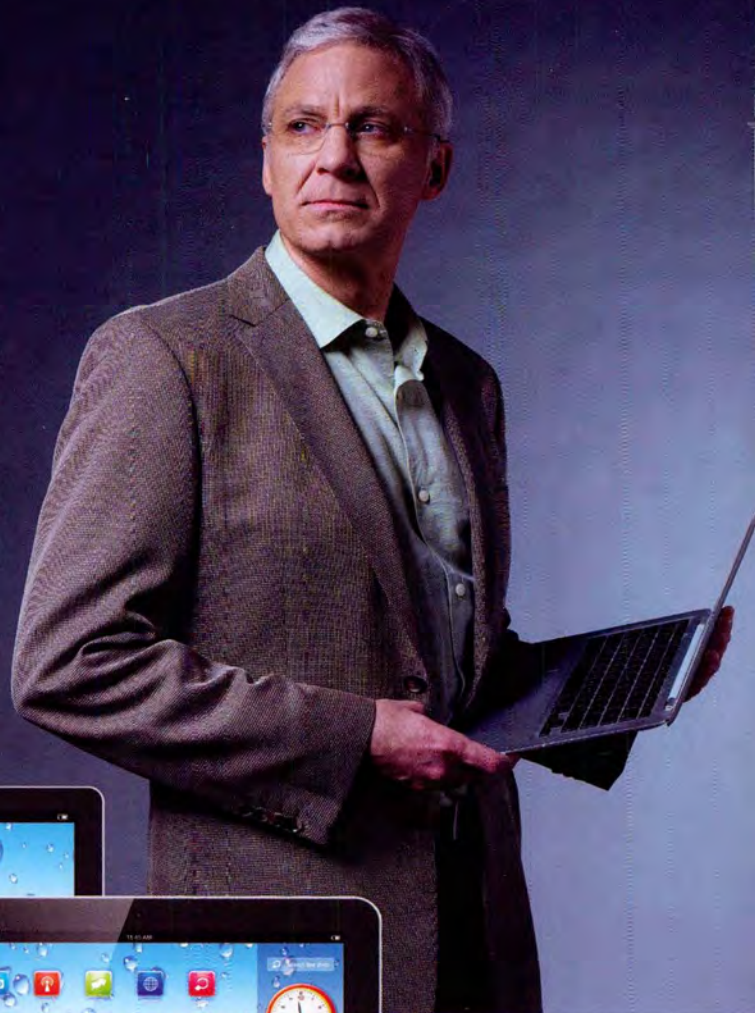
19. Chandra P, et al. Valsalva and Purtscher's retinopathy with optic neuropathy in compressive thoracic injury. *Eye* 2005;19:914-5.
20. Skornin I, Keith JF. Valsalva retinopathy: examples of classic and secondary occurrences. *Clin Ref Optom* 2008;19(2):36-40.
21. Jabaly-Habib HY, et al. Suprachoroidal haemorrhage after Valsalva in a myopic eye with circular buckle. *Asian J Ophthalmol* 2003;5(3):11-12.
22. Leibowitz HM. The red eye. *N Engl J Med* 2000;343(5):345-51.
23. Tatlipinar S, et al. Optical coherence tomography features of sub-internal limiting membrane hemorrhage and preretinal membrane in Valsalva retinopathy. *Can J Ophthalmol* 2007;42:129-30.
24. Ball WL. OCT is key to confirming Valsalva retinopathy. Review of Optometry Online – 33rd Annual Diagnostic Technology Report 2010. http://www.revoptom.com/continuing_education/tabviewrest/lessonid/106921/
25. Gibran SK, et al. Changes in the retinal internal limiting membrane associated with Valsalva retinopathy. *Br J Ophthalmol* 2007;91:701-2.
26. Durukan AH, et al. Long-term results of Nd:YAG laser treatment for premacular subhyaloid haemorrhage owing to Valsalva retinopathy. *Eye* 2008;22:214-8.
27. Chapman-Davies A, Lazarevic A. Valsalva maculopathy. *Clin Exp Optom* 2002;85(1):42-5.
28. Hazem HA, Shazly TA. Evaluation of pulsed Nd:YAG laser posterior hyaloidotomy as an emergency treatment for blinding premacular subhyaloid hemorrhage. *Open Access Emergency Medicine* 2011;3:33-7.
29. Mahesh G, et al. ND Yag hyaloidotomy for premacular haemorrhage in Valsalva retinopathy. *Kerala J Ophthalmol* 2006;XVIII(4):301-3.
30. Felipe E, et al. Preretinal hemorrhage. *Einstein* 2004;2(4):314-5.
31. Wickremasinghe SS, et al. Valsalva haemorrhagic retinopathy in a pregnant woman: implications for delivery. *Acta Ophthalmol Scand* 2003;81:420-2.
32. Nili Ahmadabadi M, et al. Nd:YAG membranotomy in diabetic premacular hemorrhage. *Bina J Ophthalmol* 2008;13(3):336-340.
33. Gabel VP. Nd:YAG laser photodisruption of hemorrhagic detachment of the internal limiting membrane. *Am J Ophthalmol* 1989;107(1):33-7.
34. Farvardin M, et al. Neodymium:YAG laser treatment for premacular hemorrhage. *Arch Iranian Med* 2005;8(1):8-13.
35. Ulgib MW, et al. Long-term results after drainage of premacular subhyaloid hemorrhage into the vitreous with pulsed Nd:YAG laser. *Arch Ophthalmol* 1998;116:1465-9.
36. Zou M, et al. Persistent unsealed internal limiting membrane after Nd:YAG laser treatment for valsalva retinopathy. *BMC Ophthalmology* 2013;13:15.
37. De Maeyer K, et al. Sub-inner limiting membrane haemorrhage: causes and treatment with vitrectomy. *Br J Ophthalmol* 2007;91:869-72.
38. El-Defrawy H, et al. Valsalva retinopathy in pregnancy. Should we treat? *J R Soc Med Sh Rep* 2011;2:45-7.
39. Deane JS, Ziakas N. Valsalva retinopathy in pregnancy. *Eye* 1997;11:137-8.
40. Bolder PM, Norton ML. Retinal hemorrhage following anesthesia. *Anesthesiology* 1984;61:595-7.
41. Sezen F. Retinal haemorrhages in newborn infants. *Br J Ophthalmol* 1970;55:248-53.
42. Baum JD, Bulpitt CJ. Retinal and conjunctival haemorrhage in the newborn. *Archives of Disease in Childhood* 1970;45:344-9.
43. Herr S, et al. Does Valsalva retinopathy occur in infants? An initial investigation in infants with vomiting caused by pyloric stenosis. *Pediatrics* 2004;113:1658-61.
44. Levin AV. Retinal hemorrhages: advances in understanding. *Pediatr Clin N Am* 2009;56:333-44.
45. Duane TD. Valsalva hemorrhagic retinopathy. *Trans Am Oph Soc* 1972;70:298-313.
46. de Crecchio G, et al. Valsalva retinopathy associated with a congenital retinal macrovessel. *Arch Ophthalmol* 2000;118(1):146-7.
47. Konotey-Ahulu F. Valsalva vitreous haemorrhage and retinopathy in sickle cell haemoglobin C disease. *Lancet* 1997;349:1774.
48. Dhasmana R. Bilateral premacular subhyaloid hemorrhage in Dengue fever. *Journal of Ophthalmic and Vision Research* 2011;6(1):63-5.
49. Medele RJ, et al. Terson's syndrome in subarachnoid hemorrhage and severe brain injury accompanied by acutely raised intracranial pressure. *J Neurosurg* 1998;88:851-4.
50. McCarron MO, et al. A systematic review of Terson's syndrome: frequency and prognosis after subarachnoid haemorrhage. *J Neurol Neurosurg Psychiatry* 2004;75:491-3.
51. Gibran SK. Unilateral vitreous haemorrhage secondary to caudal epidural injection: a variant of Terson's syndrome. *Br J Ophthalmol* 2002;86:353-4.
52. Hassan A, et al. Terson's syndrome. *Neurocrit Care* 2011;15:554-8.
53. Paquette F, et al. Terson's syndrome. *Can J Neurol Sci* 2012;37:861-2.
54. Ko F, Knox DL. The ocular pathology of Terson's syndrome. *Ophthalmology* 2010;117:1423-9.
55. Resnick SJ, Rabinstein AA. Terson's syndrome in subarachnoid haemorrhage. *J Neurol Neurosurg Psychiatry* 2006;77:287.
56. Caplen SM, Madreperla SA. Purtscher's retinopathy: a case report and review. *Am J Emerg Med* 2008;26:836.e1-836.e2.
57. Buckley SA, James B. Purtscher's retinopathy. *Postgrad Med J* 1996;72:409-12.
58. Agrawal A, McKibbin M. Purtscher's retinopathy: epidemiology, clinical features and outcome. *Br J Ophthalmol* 2007;91:1456-9.
59. Agrawal A, McKibbin MA. Purtscher's and Purtscher-like retinopathies: a review. *Surv Ophthalmol* 2006;51:129-36.
60. Errera MH, et al. Pregnancy-associated retinal diseases and their management. *Surv Ophthalmol* 2013;58:127-42.
61. Miguel AIM, et al. Systematic review of Purtscher's and Purtscher-like retinopathies. *Eye* 2013;27:1-13;doi:10.1038/eye.2012.222.
62. Nor-Masniwati S, et al. Purtscher-like retinopathy following valsalva maneuver: case report. *Journal of Medical Case Reports* 2011;5:338.
63. Tampoya C, et al. Ocular manifestations of Valsalva maneuver. *Clin Ref Optom* 2012;23:12-9.

iD LifeStyle 2

You have changed the way
you use your eyes.

That's why we have changed
the way we make our lenses.

*Ben wears **Harmony**.*



Introducing a total lens solution for every age and lifestyle.
Clarity and Harmony are an advanced portfolio of lenses designed
to maximize your vision in a digital world.

HOYA iD LifeStyle 2 CLARITY™

Optimized for a newer progressive
wearer; to help you see clearly at
a distance and close up.

HOYA iD LifeStyle 2 HARMONY™

Optimized for a mature progressive
wearer; for greater precision when you
need extra help seeing close up.



HOYA

hoyavision.ca

DISCOVER THE POWER AND SIMPLICITY OF SYSTANE®



ONE Name, **ONE** Brand, **ONE** Recommendation

Systane®

The brand Eye Care Professionals
have made **Number ONE**

The one brand with a comprehensive portfolio of products designed
to meet the unique needs of your different patients, your practice
and your commitment to care.

Alcon

a Novartis company

Systane® GEL DROPS, Systane® BALANCE and Systane® ULTRA are
Manufactured by ALCON LABORATORIES INC., Fort Worth, Texas 76134
Distributed by ALCON Canada Inc., 2665 Meadowpine Blvd., Mississauga, ON L5N 8C7

www.alcon.ca

Systane® is a registered trademark of Novartis AG
©2013 Novartis 10/13 OP13241