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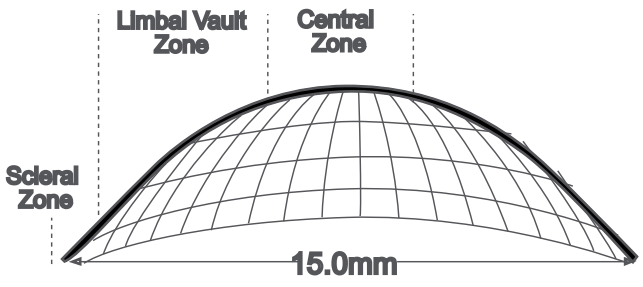

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EST. 1939 VOLUME 77 ISSUE 2

CONTENTS

Cover photo by Michelle Valberg
Michelle Valberg is considered "Canada's Arctic photographer". She took this photo at the Inuit Children's Centre in Ottawa, Ontario.
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As I was preparing to write this editorial, McMaster University in Hamilton, Ontario announced the death of Dr. David Sackett, Professor Emeritus of Medicine in its Faculty of Health Sciences. Sackett is widely recognized as the "Father" of evidence-based medicine, the application of the best possible evidence in the scientific literature to the clinical care of patients. Evidence-based care is the now the foundation of the standard of care in many health disciplines, including optometry. Indeed, "evidence –based" and "evidence" have found their way into many documents such as the Optometric Practice Reference[1] of the College of Optometrists of Ontario.

The question is: what is evidence? In modern medicine, evidence seems to be based on clinical trials, comparing experimental and control groups of patients, whose assignments are masked from those conducting the assessments of the treatment modalities under study. We see the same approach taken in optometric studies across a wide range of clinical areas. However, many long-standing approaches to managing clinical problems have never been subjected to this kind of evaluation, and may not be suitable for such a study, although they remain the subject of case reports and other studies, and continue to be taught and routinely performed. Their apparent success (relief of symptoms, disappearance of clinical signs) is often deemed to be satisfactory evidence of efficacy. But is it sufficient?

Last December, we published an article, *Diverses modalities de traitement des troubles d'apprentissage scolaire par therapies visuelles: quelles sont les evidence scientifiques?*[2] that attempted to present the evidence, or lack thereof, for managing visual problems associated with learning disabilities. In the following pages, we present responses to this article from two private practitioners as well as the College of Optometrists in Vision Development. We don't have the space or the budget, to print the other correspondence we have received in reaction to this paper, but we have placed everything on our website for you to examine and make your own conclusions. I would like to thank Dr. Charles Boulet of Black Diamond, Alberta for kindly supplying the English translation of the original article, which is on the website for those who could not read the original French version. There is also a very detailed two-part response in both English and French which makes interesting reading. I thank the authors for their interest and passion for the subject. I hope that these online articles will prompt further discussion and consideration of what constitutes evidence-based practice in optometry.

The rest of this issue addresses less controversial topics. The care and management of ocular prostheses is discussed in one paper. Our second clinical paper addresses barriers to vision care for Canada's First Nations. The latter is timely, considering recent news reports on the appalling conditions that are found in some First Nations communities. We also have a couple of brief articles on practice management, including a discussion of how to negotiate a lease.

I shall be at the CAO Congress in Fredericton for a couple of days and look forward to speaking with many of you about the CJO*RCO. The last few months have shown that the CAO membership has a great deal of interest in the publication, and controversy or not, it's always satisfying for an editor to know that it's being read!

B. Ralph Chou, MSc, OD, FAAO
Editor-in-Chief

1. College of Optometrists of Ontario. Optometric Practice Reference. Toronto: C.O.O., 2015. http://www.collegeoptom.on.ca/images/pdfs/030_iD_COO_OPR_book_WEB.pdf Accessed 20 May 2015.
2. Ganivet A, Denault I, Superstein R, Fallaha N. Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles: quelles sont les évidences scientifiques? Can J Optom 2014;76(2): 15-22.

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1. Kiss et al. Comparison of ultra-widefield fluorescein angiography with the Heidelberg Spectralis® \noncontact ultra-widefield module versus the Optos® optomap. Clin Ophthalmol. 2013, 389-94.
2. Silva, Cavellerano, Sun, Noble, Aiello. Nonmydriatic Ultrawide Field Retinal Imaging Compared with Dilated Standard 7-Field 35-mm Photography and Retinal Specialist Examination for Evaluation of Diabetic Retinopathy. American Journal of Ophthalmology, 2012. 3. Data on file 4. Silva, Cavellerano, Haddad, Kwak, Dyer, Omar, Shikari, Aiello, Sun, Aiello; Ophthalmology, 2015

Au moment où je me préparais à rédiger cet éditorial, l'Université McMaster à Hamilton (Ontario) annonçait le décès du Dr David Sackett, professeur émérite de médecine à sa Faculté des sciences de la santé. Le Dr Sackett est généralement reconnu comme le « père » de la médecine factuelle, soit de l'application au soin clinique des patients des meilleurs éléments de preuve possibles contenus dans les publications scientifiques. Les soins factuels constituent l'assise de la norme de soin dans beaucoup de disciplines de la santé, y compris l'optométrie. En fait, les expressions « factuel » et « élément de preuve » se retrouvent dans de nombreux documents comme l'Optometric Practice Reference[1] de l'Ordre des optométristes de l'Ontario.

Il faut se demander : Qu'est-ce qu'un élément de preuve? En médecine moderne, les éléments de preuve semblent reposer sur des essais cliniques comparant des groupes expérimentaux ou des groupes témoins de patients dont les tâches sont cachées à ceux qui évaluent les modes de traitement à l'étude. Nous constatons la même démarche dans des études optométriques effectuées dans un vaste éventail de secteurs. Beaucoup de vieilles façons d'aborder la prise en charge des problèmes cliniques n'ont toutefois jamais fait l'objet de ce genre d'évaluation et pourraient ne pas convenir à une telle étude même si elles sont toujours le sujet de rapports de cas et d'autres études et si l'on continue de les enseigner et de les utiliser de façon routinière. Leur réussite apparente (soulagement des symptômes, disparition de signes cliniques) est souvent considérée comme une preuve satisfaisante d'efficacité. Est-ce toutefois suffisant?

En décembre dernier, nous avons publié un article, *Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles : quelles sont les évidences scientifiques*[2]*?* où l'on a essayé de présenter les éléments de preuve, ou d'en décrire l'absence, dans la prise en charge de problèmes de vision associés aux troubles d'apprentissage. Dans les pages qui suivent, nous présentons des réponses à cet article de deux professionnels du secteur privé, ainsi que du College of Optometrists in Vision Development. Nous n'avons ni la place ni le budget nécessaires pour imprimer les autres éléments de correspondance que nous avons reçus à la suite de la publication de cette communication, mais nous les avons tous affichés sur notre site Web pour vous permettre de tirer vos propres conclusions. Je remercie le Dr Charles Boulet de Black Diamond AB d'avoir fourni la traduction en anglais de l'article original qui se trouve sur le site Web à l'intention de ceux qui ne pouvaient lire la version originale en français. Il y a aussi une réponse très détaillée en deux parties, à la fois en français et en anglais, qui est intéressante à lire. Je remercie les auteurs de l'intérêt et de la passion qu'ils manifestent pour le sujet. J'espère que ces articles en ligne stimuleront la discussion et la réflexion sur ce qui constitue une pratique factuelle en optométrie.

Le reste de ce numéro porte sur des sujets moins controversés. Une communication porte sur le soin et le traitement des prothèses oculaires. Notre deuxième document clinique porte sur les obstacles aux soins de la vue pour les Premières Nations du Canada. Ce dernier tombe à point, compte tenu des récents reportages sur les conditions abominables qui existent dans certaines collectivités des Premières Nations. Nous publions aussi quelques brefs articles sur la gestion médicale, y compris une discussion sur la façon de négocier un bail.

Je serai au Congrès de l'ACO à Fredericton pendant quelques jours et j'ai hâte d'échanger avec beaucoup d'entre vous au sujet du CJO*RCO. Les derniers mois ont montré que les membres de l'ACO s'intéressent vivement à l'application et, qu'il y ait controverse ou non, il est toujours satisfaisant pour un rédacteur de savoir que son journal est lu!

B. Ralph Chou, M. Sc., O.D., F.A.A.O
Éditeur en chef

1. Ordre des optométristes de l'Ontario. Optometric Practice Reference. Toronto : O.O.O., 2015. http://www.collegeoptom.on.ca/images/pdfs/030_iD_COO_OPR_book_WEB.pdf. Consulté le 20 mai 2015.
2. Ganivet A, Denault I, Superstein R, Fallaha N. Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles : quelles sont les évidences scientifiques? R Can Optom 2014;76(2) : 15-22.

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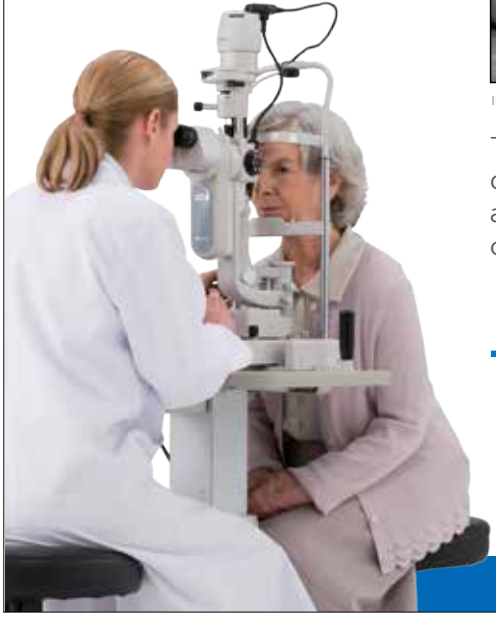

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Dear Editor-in-Chief,

In Volume 6, Issue 2 of the Canadian Journal of Optometry, your editorial refers to the practice of optometry as a diverse profession, managing a wide variety of conditions for our patients, calling upon broad knowledge to understand how to accomplish this. Just a few pages later, one article in particular seems to go far afield professionally in order to justify how optometrists should do just the opposite: Limit diversity in practice, manage a narrower variety of concerns, and forget their extensive knowledge and experience in doing so.

The title of the article in question itself asks the question of whether there is evidence to support use of vision therapy (Optometric Vision Therapy, 'OVT', or simply, 'VT') for LD. See: CJO Vol 6, Issue 2, "Diverses modalities de traitement des troubles d'apprentissage scolaire par therapies visuelles: quelles sont les evidence scientifiques?". The title immediately identifies the bias of the authors, but also points to a lack of specific knowledge: Any doctor who has undertaken training vision rehabilitation through any of the behavioural schools in the United States, or through COVD, OEP, or NORA would never ask the question of 'if' there is evidence, and would sooner engage in discussion around the evidence itself, and how to best implement this in practice. Modern optometric vision rehabilitation has advanced treatment of amblyopia, strabismus, and reaches beyond this to include the care of TBI, child development, and learning concerns. 'VT' is not simply eye exercises, lenses and filters, as the authors seem to suggest – evidence that we are not discussing the same topic.

More concerning is the professional bias in this purported research piece. There is a longstanding push on the part of some professionals to marginalize optometric vision rehabilitation, 'VT', as 'unscientific' or not based in 'evidence' – a somewhat less provocative turn of phrase than 'quackery'. This is presumably in order to protect the public against unscrupulous doctors who make irrational promises regarding children's vision and then never deliver on the results. Similar concerns can be raised about virtually every profession of healthcare, psychology, and education, but for some reason there is a need to level doubt at a noble profession. OVT, not publicly funded, will always remain at the mercy of the unlimited funding of medicine, so the bias matters.

Among the obvious responses to such a paper is that some patients will be discouraged from seeking what is often the only treatment that will help. OVT has an important role to play in child development and learning disorders, yet the article summarily and somewhat condescendingly dismisses it: This is evidenced through marginalising remarks like 'LD' "are complex problems, sadly with no simple solutions" – impugning the OVT view of LD is a 'simple solution'. Also, if there is truly no evidence of efficacy, what then are we to conclude of those who profess otherwise and continue to practice in this domain?

It is precisely this misunderstanding of the profession that leads me to question the frame of reference and goals of those who seek to disparage OVT in the treatment of learning disabilities. The proof is there: Stating there is no evidence only exposes a lack of relevant knowledge and training in the area of primary concern.

Academic honesty also requires the full light of scrutiny, and there is in this case no possibility for scrutiny other than of those who have promoted this paper to publication because of language of publication. Also, the authors speak from an academic perspective, where anything can be justified by means of selective citation. I have therefore translated the article to allow my English-speaking VTOD colleagues from around the world to also respond. My primary goal is to invite dialog: Clearly there is an important gap in understanding, and bias in care delivery that needs to be addressed urgently - Ignoring VT is costly.

With respect to rhetorical and clinical errata in the paper, I will remark on only a few. First, the authors assert that since individual procedures and methods do not cure dyslexia, these should be avoided. Indeed, there is no cure for dyslexia, and much of what is now accepted as standard care of children with learning disabilities lacks robust scientific support. Despite a clear bias in the evidence referenced, many of the works cited do themselves support use of certain VT elements in child development and learning. VT works in a variety of contexts for very good reasons, both clinically and scientifically; my colleagues who work in this field know this. It is disappointing the authors would ignore this knowledge and experience.

Next, the authors repeat throughout that visual impediments are an important source of exacerbation in comfort and reading, and that these should be addressed when children are suspected of having learning disabilities. On this we agree. The great preponderance of evidence also shows vision is critical to learning, that it is trainable, and that many visual conditions are subclinical and will not be detected, even with 'comprehensive eye exams'.

Finally, the authors recommend following science-based approaches to dealing with learning disabilities, but offer none. OVT is deemed 'not evidence-based', but no OVT references are provided. Of interest, OVT is also omitted from their recommendations for a multi-disciplinary approach. To suggest optometry and science do not support OVT for learning disabilities is simply untenable logically, clinically, and factually.

What we call 'evidence' may be gleaned through observation in practice, rationalization, or both. We should never simply discard an important profession and element in therapy on conjecture alone. VT's critical role in child learning and development deserves more than a cursory dismissal.

Sincerely,
Charles A. Boulet, BSc, BEd, OD
Black Diamond, Alberta

FOR FURTHER READING:

1. http://oepf.org/visual-impediments-to-learning/
2. http://iris.ca/wp/wp-content/uploads/2012/12/Dr-Quaid-Binocular-vision-research.pdf
3. "Impact of Simulated Hyperopia on Academic-Related Performance in Children", S. Narayanasamy, S. J. Vincent, G. P. Sampson, and J. M. Wood; Optometry and Vision Science, Vol92, No 2., 2015 – Sample, showing even simple hyperopia interferes with learning behaviour.
4. http://learningmanagement.ca/research-by-diagnosis/
5. http://learningmanagement.ca/proof-standards/
6. http://vtdocs.net/recommended-reading/

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Reference: « *Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles: quelles sont les évidences scientifiques?* » (CJO – RCO, Volume 76, Issue 2, December 2014)

Authors : Amélie Ganivet, OD M.Sc., Isabelle Denault, OD, Rosanne Superstein, MD FRCSC, Nicole Fallaha, MD FRCSC

Dear Editor-in-Chief,

We would like to respond to the letter you received regarding our article entitled « *Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles: quelles sont les évidences scientifiques?* » (CJO Volume 76, Issue 2). We were surprised both by the tone and by the inaccuracy in the facts they report.

Firstly, we would like to address the comment that the authors lack experience in this area: Drs Superstein and Fallaha are assistant professors of ophthalmology at University of Montreal and are full-time faculty members at l'Hôpital Ste-Justine de Montréal. They are subspecialized in the diagnosis and treatment in visual difficulties in children. Their expertise is well recognized at a provincial level. Dr. Ganivet, optometrist, holds a masters in binocular vision and Dr. Denault, also an optometrist, has post graduate training in pediatric optometry. Their practice is focused on the management of binocular disorders in children 0 to 18 years and they are also often invited speakers on such topics.

We are well aware that the various approaches to the treatment of learning disabilities are highly controversial. The goal of our article was not to hurt or judge the practice of some of our colleagues. Given that learning disabilities are an important concern from a public health point of view, it is relevant to review the scientific literature in order to update our knowledge regarding vision therapies.

Even if a subjective benefit from vision therapy in children can be documented, this benefit should be proven in the context of a scientific study so that it could be recommended as evidence-based. Unfortunately, the studies that show a benefit do not have the scientific rigor to support them. Whether due to small sample size, absence of a control group or lack of a sound scientific protocol, there is no positive consensus with regard to vision therapy being effective. For example, one of the studies referred to by the author in the letter to the editor showed that there is a significant reduction in reading performance when a hyperopia of 2.50D was simulated. Besides the small sample size, there was no cycloplegic refraction done as a baseline measurement which could mask latent hyperopia. In addition, the act of simulating hyperopia can unveil a heterophoria that is present. Consequently, the reduction in the reading performance reported could be the result of the unmasked heterophoria instead of the simulated hyperopia. The authors themselves conclude that other studies need to be done to determine the impact of a small hyperopic correction on performance in school.

Based on the scientific knowledge available at this time, vision therapies as a tool to treat learning disabilities are not recognized as standard practice in the optometry and ophthalmology professions. We agree that an uncorrected visual problem can amplify learning difficulties. Convergence and divergence insufficiency and excess need to be corrected as well as refractive errors as per the preferred practice patterns. Whether it could be with optical correction or orthoptic exercises, it is essential to optimize vision based on evidence-based medicine.

In conclusion, we are happy to acknowledge the importance of a complete eye exam in children with learning difficulties which should include ocular health, cycloplegic refraction and binocular vision assessment. Given that so much learning occurs through visual means, it is essential that a complete eye exam occur at the first sign of a learning disability as stated in our article. At the current time, it is unfortunately true that an eye exam is not standard for a child with a learning disability and we believe that this should change. In our practices, we are actively working to sensitize the many professionals who work with this population to promote a proper

eye exam early in the diagnostic paradigm in order to have good ocular health and function.

Respectfully,
Amélie Ganivet OD, M.Sc.
Isabelle Denault, OD
Rosanne Superstein, MD, FRCSC
Nicole Fallaha, MD, FRCSC

Article en référence: *« Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles: quelles sont les évidences scientifiques? »* (CJO – RCO, Volume 76, Issue 2, décembre 2014)

Auteurs : Amélie Ganivet, OD M.Sc., Isabelle Denault, OD, Rosanne Superstein, MD FRCSC, Nicole Fallaha, MD FRCSC

Cher éditeur en chef,

Par la présente, nous désirons faire suite à la lettre à l'éditeur que vous avez reçue concernant notre article publié dans le CJO Volume 76, Issue 2 (*Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles: quelles sont les évidences scientifiques?*). C'est avec étonnement que nous avons pris connaissance de cette lettre tant au niveau des propos rapportés que de la véhémence avec laquelle ces derniers ont été énoncés.

Tout d'abord, dire que l'expérience des auteurs fait défaut n'est pas sans réserves : D^re^ Superstein et D^re^ Fallaha sont professeures adjointes à l'Université de Montréal et ophtalmologistes surspécialisées dans le diagnostic et le traitement de divers troubles visuels chez les enfants à l'Hôpital Ste-Justine de Montréal. Leur expertise est d'ailleurs reconnue à l'échelle de notre province. D^re^ Ganivet, optométriste, détient une maîtrise en vision binoculaire et D^re^ Denault, également optométriste, une formation de deuxième cycle universitaire en optométrie pédiatrique. Toutes deux ont une pratique optométrique axée majoritairement sur la gestion et la rééducation des troubles de vision binoculaire chez les enfants de 0 à 18 ans et agissent régulièrement à titre de conférencières invitées à ce sujet.

Nous sommes tout à fait conscientes que les diverses approches de traitement des troubles d'apprentissage scolaire par thérapies visuelles sont largement controversées. Le but de notre article n'était certainement pas de nuire à certains membres de notre profession ni de juger leur choix de pratique. Comme les troubles d'apprentissage scolaire sont de plus en plus au centre de nos préoccupations sociales, il nous semblait pertinent de faire une mise à jour sur l'état des connaissances actuelles en regard des différentes thérapies visuelles proposées afin d'en évaluer les fondements scientifiques.

Admettant qu'il puisse être satisfaisant d'observer subjectivement un quelconque potentiel bénéfique par thérapie visuelle chez un patient avec troubles d'apprentissage scolaire, il n'en demeure pas moins que l'utilisation de ces thérapies à plus large échelle ne devrait être encouragée et justifiée que par confirmation scientifique (evidence-based medicine). Malheureusement, ces justifications sont insuffisantes à ce jour. Les études attestant d'un quelconque bienfait sont majoritairement des études non contrôlées scientifiquement. Que ce soit dû à un faible échantillonnage, l'absence de sujets contrôles ou encore un manque de rigueur au niveau du protocole de recherche, aucun consensus positif en regard des diverses thérapies visuelles proposées n'a pu être établi à ce jour. À titre d'exemple, une étude citée par l'auteur de la lettre à l'éditeur fait état d'une réduction significative des performances en lecture lorsqu'une hypermétropie de +2.50D. est simulée. Outre le faible échantillonnage utilisé, l'évaluation de la réfraction sous cycloplégie n'a pas été faite au préalable. Cette étape primordiale aurait pourtant permis d'éliminer la présence d'hypermétropie latente. De plus, la simulation d'une hypermétropie peut amplifier une hétérophorie présente à l'état naturel chez le sujet. Ainsi, la réduction des performances en lecture rapportée pourrait être plutôt une conséquence du

déséquilibre oculo-moteur engendré que de l'hypermétropie simulée elle-même. Les auteurs concluent d'ailleurs que plus d'études sont requises afin de déterminer l'impact d'une faible correction hypermétropique sur les performances scolaires.

À partir des connaissances scientifiques établies à ce jour, les thérapies visuelles visant à traiter les troubles d'apprentissage scolaire ne sont pas officiellement reconnues comme standards de pratique dans la profession. Nous n'ignorons certainement pas qu'un trouble visuel non corrigé puisse amplifier les troubles d'apprentissage scolaire. C'est pourquoi les insuffisances ou excès de convergence/divergence de même que les erreurs de réfraction se doivent d'être corrigées selon les standards reconnus dans la profession. Que ce soit par correction optique ou exercices d'orthoptique, il est essentiel de maximiser le système oculo-visuel en se basant sur la médecine factuelle.

Ceci étant dit, nous sommes heureuses de constater que nous comprenons tous bien l'importance d'effectuer un examen visuel complet chez tous les enfants ayant des difficultés d'apprentissage scolaire, incluant entre autres l'évaluation de la santé oculaire mais aussi de l'état de la vision binoculaire et de la réfraction sous cycloplégie. Nous sommes, nous aussi, d'avis que c'est d'une importance capitale, les apprentissages passant inévitablement par la vision. Tel que mentionné dans notre article, il est impératif qu'un examen complet soit effectué dès les premières suspicions d'un trouble d'apprentissage scolaire. Actuellement, il est vrai que ce diagnostic ne requière pas au préalable une évaluation de la condition oculo-visuelle de l'enfant, ce que nous dénonçons tout autant. Dans notre milieu, nous travaillons activement à conscientiser les divers professionnels impliqués auprès de ces enfants à promouvoir dès le départ, la nécessité d'un examen visuel précoce afin de favoriser une bonne santé et un bon fonctionnement oculo-visuel.

Cordialement,

Amélie Ganivet OD, M.Sc.
Isabelle Denault, OD
Rosanne Superstein, MD, FRCSC
Nicole Fallaha, MD, FRCSC

Received from Ida Chung, OD, FCOVD, FAAO, President the College of Optometrists in Vision Development.

This is a critique of: *"Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles: quelles sont les évidences scientifiques*?" published in the Canadian Journal of Optometry (Vol. 76 No. 2, 2014:15-22). The equivalent title in English is: "The treatment of scholastic learning disabilities through the diverse visual therapy modalities: What is the scientific evidence?"

The authors of the paper identify dyslexia as a fundamental learning disability and the main focus of their paper. It is problematic to dismiss the influence of optometric vision therapy on all other learning issues, and to limit the discussion to dyslexia. The motivation for this approach seems clear at the outset in defining dyslexia as a phonologically based problem and to therefore dismiss any visual interventions as irrelevant. References are then selectively cited to support the premise that there is no valid evidence for visual interventions in dyslexia.

Even if one were to accept that the construct of dyslexia is representative of the issues in vision and learning in general, the premise of this paper is flawed. This notion that vision has no bearing on dyslexia is a biased and skewed proposition. The paper overlooks an entire book summarizing the visual aspects of dyslexia (*The Visual Aspects of Dyslexia*. John Stein, Zoï Kapoula, editors. Oxford University Press, 2012). Let's consider various aspects of the visual process and its relationship to reading in general, and dyslexia in particular, as reflected in studies that were not cited in the paper in the CJO. One representative study in each area will be highlighted to provide evidence for why it is premature if not deceptive to dismiss visual factors in dyslexia.

Binocular Vision

Jainta S, Kapoula A. Dyslexic children are confronted with unstable binocular fixation while reading. PLoS One, 2011. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3071843/

The authors conclude that besides documented phoneme processing disorders, visual/ocular motor imperfections may exist in dyslexics that lead to fixation instability and thus, to instability of the letters or words, during reading. Such instability may perturb fusional processes and might – in part - complicate letter/word identification.

Eye Movements

Binocular saccade coordination in reading and visual search: a developmental study in typical reader and dyslexic children. Seassau M, Gérard CL, Bui-Quoc E, and Bucci MP. Frontiers in Integrative Neuroscience 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4214188/

The authors conclude that the atypical eye movement patterns observed in dyslexic children suggest a deficiency in the visual attentional processing as well as an impairment of the ocular motor saccade and vergence systems interaction.

Differences in eye movements and reading problems in dyslexic and normal children. Eden GF, Stein JF, Wood HM, Wood FB. Vision Res. 1994 May;34(10):1345-58. http://www.ncbi.nlm.nih.gov/pubmed/?term=eden+vision+vergence .

The authors conclude that the presence of oculomotor abnormalities in a non-reading task strongly suggests that the underlying deficit in the control of eye movements seen in dyslexics is not caused by language problems alone.

Stereopsis, accommodative and vergence facility: do they relate to dyslexia? Buzzelli AR. Optom Vis Sci. 1991 Nov;68(11):842-6. http://www.ncbi.nlm.nih.gov/pubmed/1766644/

The study found dyslexics performed significantly worse than the matched normal readers on a test of vergence facility, and indicates that less efficient dynamic vergence facility may contribute to reading impairment, unlike other static functions such as visual acuity and stereopsis. These clinical findings in dyslexics were confirmed by Hung using objective eye movement recordings. Hung, GK., Reduced vergence response velocities in dyslexics--a preliminary report, OPO, 9: 420-423, 1989.

Visual Attention

Vidyasagar TR and Pammer K. Dyslexia: a deficit in visuo-spatial attention, not in phonological processing. Trends in Cognitive Science 2010;14(2):57-63.

The critical deficit in developmental dyslexia might be one that affects the focal visual attentional mechanisms essential for efficient reading. The poor phonological awareness that is seen in most dyslexics might not be the cause of the reading difficulty, but could be the result of the poor orthographic inputs feeding into the regions mediating grapheme–phoneme correspondence, and also due to a general temporal processing deficit affecting sensory modalities and their integration. Visual attention is such a strong factor that it can predict future reading acquisition in pre-schoolers independent of phonology (see here: http://www.sciencedirect.com/science/article/pii/S0960982212002709)

Visual Performance and Reading

Validity and Reliability of the Revised Convergence Insufficiency Symptom Survey in Children Aged 9 to 18 Years. Borsting EJ et al. Optom Vision Sci 2003;80(12):832-838.

When we move beyond the constraints of dyslexia, it should be obvious that something as basic as convergence insufficiency, the most widespread binocular dysfunction in children, has a heavy impact on reading performance in general. Consider the following:

- 43% of children with convergence insufficiency reported losing concentration fairly often or always when reading, as opposed to only 7%of the children with normal binocular vision.
- 34% of the children with convergence insufficiency reported trouble remembering what is read as opposed to 9% of children with strong binocular vision.
- 47% of the children with convergence insufficiency reported feeling like they read slowly as opposed to 9% of the children with normal binocular vision.

Association between Reading Speed, Cycloplegic Refractive Error, and Oculomotor Function in Reading Disabled Children versus Controls. Quaid PT & Simpson TL. Graefe's Archives of Clinical & Experimental Ophthalmology, 201; 251(1): 169-187.

This research looked at one hundred children aged 6 to 16 (50 controls and 50 children with reading based learning difficulties, non-dyslexic, with IEPs assigned). It was very clear from this research that reduced function in several oculomotor measures (such as vergence facility, NPC, accommodative facility to name a few) were strongly associated with reduced reading performance as determined objectively with an infrared tracking system (Visagraph III). This research also shows that refractive error tends to be more hyperopic in individuals diagnosed with reading based learning difficulties with IEPs assigned in Canada in particular. The Visagraph III was used to determine objectively: The number of eye movements used to read 100 words; the reading speed on average attained by each patient in each group; in addition to a comprehension element being part of the testing protocol.

Academic Behaviors and Convergence Insufficiency

Academic behaviors in children with convergence insufficiency with and without parent-reported ADHD. Rouse M, et al. CITT Study Group. Optom Vis Sci 2009;86(10):1169-1177.

The Convergence Insufficiency Treatment Trial (CITT) investigators developed a questionnaire called the Academic Behavior Index (ABS). The Academic Behavior Survey is a 6-item survey that evaluates parent concern about school performance and the parents' perceptions of the frequency of problem behaviors that their child may exhibit when reading or performing schoolwork, such as failure to complete assignments, trouble concentrating in class, inattention, and avoidance. The survey was administered to the parents of 221 children 9-17 years old with symptomatic convergence insufficiency prior to enrolling in CITT, and to 49 children with normal vision. The ABS score for the symptomatic convergence insufficiency with parent-report of ADHD group was significantly higher than the symptomatic convergence insufficiency with no parent-report of ADHD group. The authors concluded that both children at risk for ADHD or related learning problems should have a comprehensive vision evaluation to assess the presence of convergence insufficiency as a contributing factor.

Vision Therapy and Reading

Three representative papers are presented here to show the effects of vision therapy on eye movements, accommodative-convergence, and visual attention respectively, and their transfer to reading acquisition and performance.

Saccade control in dyslexia: Development, deficits, training and transfer to reading. Fischer B and Hartnegg K. Optom Vis Dev 2008:39(4):181-190.

This study suggests that deficits in a specific type of saccade control contributes to specific deficits in acquiring reading skills, and that appropriate training can reduce the percentage of reading errors.

The impact of vergence and accommodative therapy on reading eye movements and reading speed. Gallaway M and Boas MB. Optom Vis Dev 2007;38(3):115-120.

This study establishes that accommodative and vergence therapy can result in improved reading speed and eye movements even in the absence of ocular motility therapy. This is documented through objective computerized tools for monitoring changes in eye movements, thereby assisting in understanding the effects of vision therapy on reading efficiency.

Effect of attention therapy on reading comprehension. Solan HA, Shelley-Tremblay J, Ficarra A, Silverman M, Larson S. J Learning Disabilities 2003;36(6):556-63.

This paper demonstrates that transfer occurs from visual attention therapy to reading performance. There are specific tests and therapy procedures well documented in the research from Solan's group. This research, as well as pertinent studies from other sources, is available in "A Research Update on Visually Based Reading Disability", by Tannen published here: http://c.ymcdn.com/sites/www.covd.org/resource/resmgr/research/visuallybasedreadingdisabili.pdf

CONCLUSION

As noted by Cornelissen, overemphasizing the role of phonological processing in reading underestimates the critical role of vision. Reading is inherently a learnt specialization which depends on the dynamic integration between a highly practiced visual system and the language system. (Cornelissen P, Editorial. Journal of Research in Reading, 2005; 28(3):209–215.) The glaring deficiency in the 2014 CJO paper by Ganivet et al is that it dismisses the relevance of vision and visual interventions based on a conclusion that there is a lack of scientific evidence in its support, in contrast to solid evidence for phonological hypotheses and interventions. However, and this is a crucial point, no published study to date has established causality between phonological awareness and a reading disorder. (Gori S and Facoetti A. How the visual aspects can be crucial in reading acquisition: The intriguing case of crowding and developmental dyslexia. Journal of Vision 2015; vol. 15, no. 1, article 8; http://www.journalofvision.org/content/15/1/8.full)

Here is the most egregious passage in the CJO paper:

There is no scientific proof at this time that vision therapy, therapeutic lenses, pursuit or saccadic exercises, perceptual exercises, magnifying glasses, coloured filters or lenses, or prism can significantly improve the performance of a child who has learning disabilities. These approaches can lead to false hopes to parents and others participating in the child's care, possibly delaying some other treatment with potentially greater benefit for the child. Furthermore, the costs of these therapies is substantial and the time required is not insignificant. Studies supporting the improvement of learning via these therapies are in fact not scientifically controlled, or based on anecdotal cases. The purported benefits would more likely be secondary to the effects of other more traditional educational therapies that are often implemented in conjunction with vision therapy, or the placebo effect in the case of the latter.

These conclusions are largely drawn from opinion pieces in the references cited and reflect the recycled policy statements of American Medical Societies and Organizations in Pediatrics and Pediatric Ophthalmology. They provide little if any original research. The statements provide no evidence for the interventions suggested for learning problems that meet the

criteria they claim visual interventions lack. Perhaps most glaringly, they presume that patients undergoing optometric interventions experience benefit either from placebo effects or traditional educational therapies administered in conjunction with vision therapy. However, most of the patients undergoing optometric vision therapy have already received educational therapies and come under the care of optometrists for vision based learning problems precisely because they have not made adequate progress with traditional educational therapies. Had placebo effects been contributory they would have been factored out from prior interventions.

In summary, this CJO paper perpetuates the misconception that visual interventions are not scientifically based in contrast to traditional educational therapies. It sets up a straw man argument that vision therapy does not cure dyslexia, whereas proponents of optometric therapy have never made that claim. It selectively reviews literature to arrive at conclusions that appear to be skewed and pre-conceived, ignoring readily available literature and sources that support a more balanced approach. Although it pays lip service to multi disciplinary interventions, the role of optometry is trivialized. This approach does a disservice to the students and parents by positioning visual factors as tangential at best, and in some instances framing the discussion toward a false sense of security that vision is largely incidental to academic performance. In contrast, a more balanced and even-handed approach to literature review on the subject is available from sources such as the recent Position Paper of the American Academy of Optometry regarding optometric care for the struggling student. http://www.aaopt.org/sites/default/files/Revised%20Oct%2018_BVPPO_Position_paper%20AAO%20website%20formatFINAL.pdf

Ceci est une revue critique de l'article intitulé: "*Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles: quelles sont les évidences scientifiques?*" ("The treatment of scholastic learning disabilities through the diverse visual therapy modalities : What is the scientific evidence?"), publié dans la Revue Canadienne d'Optométrie (RCO), (vol. 76 no. 2, 2014:15-22).

Les auteurs du papier identifient la dyslexie comme étant un obstacle fondamental à l'apprentissage et l'objet central de leur papier. En identifiant la dyslexie comme étant un problème phonologique, les auteurs justifient l'exclusion d'une description de l'importance inéluctable des interventions visuelles dans le traitement de la dyslexie. Les articles sélectionnés dans cette revue appuient tous systématiquement le principe qu'il n'existe aucune preuve fondée que les thérapies visuelles font partie intégrale du traitement de la dyslexie.

La logique de cet article implique que même si l'on admet, que la dyslexie représente un vaste spectre incluant des problèmes d'apprentissage à base visuelle, ceux-ci n'ont aucun impact direct sur la dyslexie en tant que telle. Il existe pourtant de nombreuses évidences que ceci n'est en fait pas le cas. Par exemple, mentionnons le livre récent consacré entièrement aux aspects visuels de la dyslexie (The Visual Aspects of Dyslexia, John Stein, Zoï Kapoula, editors. Oxford University Press, 2012). Les processus physiologiques responsables de la vision jouent un rôle essentiel dans la lecture en général, et donc dans la dyslexie en particulier. Aucuns des articles cités ne traitent de cette évidence. Voici ci-bas des études qui démontrent pourquoi il est prématuré et aussi trompeur de rejeter le rôle d'aspects très spécifiques de la vision qui jouent des rôles distincts dans le vaste spectre de la dyslexie.

La vision binoculaire

Dyslexic children are confronted with unstable binocular fixation while reading. Jainta S, Kapoula A. PLoS One, 2011. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3071843/

Les auteurs concluent qu'à part des désordres de processus phonologiques déjà documentés, des désordres du contrôle des mouvements oculaires peuvent aussi se présenter chez les gens vivant avec la dyslexie. Ces désordres de la vision contribuent à des instabilités de fixations et donc à la perception d'une instabilité des lettres sur la page lors de la lecture. Un tel problème de fixation peut perturber les processus qui soutiennent la fusion binoculaire, et peut donc nuire à l'identification des lettres et mots.

Les mouvements oculaires

Binocular saccade coordination in reading and visual search: a developmental study in typical reader and dyslexic children. Seassau M, Gérard CL, Bui-Quoc E, and Bucci MP. Frontiers in Integrative Neuroscience 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4214188/

Les auteurs concluent que les mouvements oculaires anormaux chez les enfants dyslexiques nuisent à l'attention visuelle, et affaiblissent l'interaction entre les systèmes contrôlant les saccades et la convergence oculaire.

Differences in eye movements and reading problems in dyslexic and normal children. Eden GF, Stein JF, Wood HM, Wood FB. Vision Res. 1994 May;34(10):1345-58.

Les auteurs concluent que la présence d'anomalies de mouvements oculaires lors des tâches non liées à la lecture, supporte que ce manque sous-jacent du contrôle de ces mouvements chez les dyslexiques ne soit pas dû uniquement aux problèmes de langage.

Stereopsis, accommodative and vergence facility: do they relate to dyslexia? Buzzelli AR. Optom Vis Sci. 1991 Nov;68(11):842-6 http://www.ncbi.nlm.nih.gov/pubmed/1766644/

Cette étude conclue que les gens atteints de dyslexie exécutent des mouvements de convergence dysfonctionnels contrairement à leurs pairs compétents en lecture; cette observation indique qu'une dysfonction de convergence dynamique peut contribuer aux problèmes de lecture, à la différence des fonctions statiques telle que l'acuité visuelle et la stéréopsie. Ces résultats obtenus chez les dyslexiques dans la clinique ont étés confirmés indépendamment par Hung, en se servant de mesures précises de mouvements oculaires lors de la lecture. (Hung, GK., Reduced vergence response velocities in dyslexics--a preliminary report, OPO, 9: 420-423, 1989.)

L'attention visuelle

Vidyasagar TR and Pammer K. Dyslexia: a deficit in visuo-spatial attention, not in phonological processing. Trends in Cognitive Science 2010;14(2):57-63.

La déficience principale responsable de la dyslexie développementale peut consister en un désordre des mécanismes d'attention visuelle essentiels à la lecture. Le manque de compréhension phonologique que l'on retrouve chez la plupart des personnes dyslexiques n'est pas nécessairement la cause directe des problèmes de lecture mais plutôt le résultat des faibles contributions orthographiques servant aux régions cérébrales qui gèrent la correspondance graphème-phonème, ainsi qu'un déficit de processus temporal affectant toutes modalités sensorielles ainsi que leur intégration. L'attention visuelle est un agent si puissant qu'elle peut prédire la capacité d'acquérir la lecture chez les enfants préscolaires, indépendamment de la phonologie (voir: http://www.sciencedirect.com/science/article/pii/S0960982212002709).

La performance visuelle et la lecture

Borsting EJ et al. Optom Vision Sci 2003;80(12):832-838. Validity and Reliability of the Revised Convergence Insufficiency Symptom Survey in Children Aged 9 to 18 Years.

Lorsqu'on dépasse les contraintes de la dyslexie, il s'avère évident qu'une condition aussi simple que l'insuffisance de la convergence oculaire (le dysfonctionnement binoculaire pédiatrique le plus répandu), aurait un lourd impact sur la lecture en général. À considérer:

- 43 % des enfants ayant une insuffisance de convergence (IC) ont éprouvé une perte de concentration 'très souvent' ou bien 'constamment' lors de la lecture, contre seulement 7 % des enfants ayant une vision binoculaire dite normale.
- 34 % des enfants ayant la IC ont également signalé éprouver des difficultés à se souvenir des détails de leur lecture contre 9 % des enfants ayant une vision binoculaire intacte.
- 47 % des enfants ayant la IC étaient dans l'impression qu'il étaient naturellement (sans aucune explication concrète) des lecteurs lents, contrairement du 9% des enfants ayant une vision binoculaire robuste.

Association between Reading Speed, Cycloplegic Refractive Error, and Oculomotor Function in Reading Disabled Children versus Controls. Quaid PT & Simpson TL. Graefe's Archives of Clinical & Experimental Ophthalmology, 201; 251(1): 169-187.

Ce projet de recherche observa 100 enfants âgés de 6 à 16 ans (50 enfants contrôles et 50 ayant une difficulté d'apprentissage liée à la lecture, non-dyslexique, et où il y avait un plan pédagogique individualisé, ('PPI' ou 'IEP' chez les écoles anglophones) en force). Il ressortit de cette enquête qu'une réduction du fonctionnement de plusieurs mesures de motilité oculaire (telle que la facilité de convergence, la convergence des objets près, la facilité d'accommodation, pour n'en nommer que quelques-uns) est impliquée dans une diminution de performance en lecture telle qu'étudiés avec des outils et mesures objectifs (Visagraph III, détecteur infra-rouge). La recherche démontre aussi qu'au Canada, l'erreur de réfraction tend vers l'hypermétropie chez ceux ayant une diagnostique de difficultés d'apprentissage à base de lecture et où un PPI est en force. Le 'Visagraph III' a permis de déterminer, par mesures objectives, le nombre de mouvements requis afin de lire 100 mots, la vitesse moyenne atteinte par chaque patient dans chaque groupe, et où il y avait une tâche de compréhension incorporée dans le protocole d'essai.

Les comportements d'apprentissage et l'insuffisance de convergence

Academic behaviors in children with convergence insufficiency with and without parent-reported ADHD. Rouse M, et al. CITT Study Group. Optom Vis Sci 2009;86(10):1169-1177.

Les chercheurs du 'Convergence Insufficiency Treatment Trial' ('CITT': les essais de traitement pour l'insuffisance de convergence) ont développé un questionnaire intitulé le 'ABS', ou 'Academic Behavior Survey'. L'ABS est un bref sondage de 6 questions conçu pour évaluer les inquiétudes des parents vis-à-vis le rendement scolaire et leurs impressions de la fréquence des comportements problématiques présentés par l'enfant lors de la lecture ou en faisant les devoirs, c'est-à-dire des problèmes tels que devoirs incomplets, difficultés à se concentrer dans la salle de classe, manque d'attention, et évitement. Le sondage a été administré aux parents de 221 enfants âgés de 9-17 ans qui démontraient l'insuffisance de convergence symptomatique antérieur à l'inscription au CITT, et à 49 enfants avec la vision normale. Les résultats du ABS pour le groupe symptomatique pour l'insuffisance de convergence et où les parents ont identifié le TDAH étaient significativement plus élevés par rapport au groupe dont l'insuffisance de convergence était symptomatique mais dont les parents n'avaient pas identifié le TDAH. Les auteurs conclurent que les enfants à risque de TDAH et de problèmes d'apprentissage liés au TDAH doivent avoir un examen complet de la vision afin de déterminer si la présence de l'insuffisance de convergence est un facteur contributif.

Les thérapies visuelles et la lecture

Nous présentons trois articles représentatifs qui démontrent les effets des thérapies visuelles sur les mouvements oculaires, la convergence d'accommodation, et l'attention visuelle respectivement, et comment l'apprentissage lors de ces activités se transfert à la lecture.

Saccade control in dyslexia: Development, deficits, training and transfer to reading. Fischer B and Hartnegg K. Optom Vis Dev 2008:39(4):181-190.

Cette étude suggère que les déficits d'un type spécifique de contrôle de saccades oculaire contribuent à des déficits spécifiques lors de l'acquisition des habiletés de lecture, et qu'un entraînement approprié peut réduire le taux d'erreur en lecture.

The impact of vergence and accommodative therapy on reading eye movements and reading speed. Gallaway M and Boas MB. Optom Vis Dev 2007;38(3):115-120.

Cette étude établit que la thérapie d'accommodation et de convergence peut conduire à une amélioration de vitesse de lecture même s'il n'y a aucune thérapie qui vise l'entraînement des mouvement oculaires. Les auteurs documentent celui-ci en se servant d'outils numériques objectifs pour documenter les changements chez les mouvements oculaires, ce qui aide à la compréhension de l'effet des thérapies visuelles sur l'efficacité de ces mouvements lors de la lecture.

Effect of attention therapy on reading comprehension. Solan HA, Shelley-Tremblay J, Ficarra A, Silverman M, Larson S. J Learning Disabilities 2003;36(6):556-63.

Cet article démontre qu'un transfert de capacité a lieu entre une thérapie d'attention visuelle et la performance en lecture. Ces tests ainsi que les procédures thérapeutiques sont bien décrits dans la recherche du groupe Solan. Cette recherche, ainsi que d'autres études des autres sources, se retrouve dans le 'Research Update on Visually Based Reading Disability' produit par Tannen, et disponible içi: http://c.ymcdn.com/sites/www.covd.org/resource/resmgr/research/visuallybasedreadingdisabili.pdf

CONCLUSION

Cornelissen rapporte que lorsqu'on donne trop d'importance au rôle du traitement phonologique dans la lecture, on diminue le rôle central de la vision. La lecture est intrinsèquement une spécialisation neuropsychologique apprise qui dépend de l'intégration dynamique entre un système visuel raffiné et le système langagier. (Cornelissen P, Editorial. Journal of Research in Reading, 2005; 28(3):209–215.) L'insuffisance flagrante dans le papier rendu par Ganivet et al. (RCO Vol 76, No. 2, 2014) se trouve dans le fait qu'il rejette l'importance de la vision et des interventions visuelles basé uniquement sur la conclusion qu'il y a un manque de preuves scientifiques pour l'appuyer par rapport à de fortes preuves pour l'hypothèse et les interventions à base phonologique. Cependant, et ce point est fort important, il n'y aucune étude publiée pour établir ou démontrer la causalité entre la conscience phonologique et les difficultés de lecture. (Gori S and Facoetti A. How the visual aspects can be crucial in reading acquisition: The intriguing case of crowding and developmental dyslexia. Journal of Vision 2015; vol. 15, no. 1, article 8; http://www.journalofvision.org/content/15/1/8.full)

Voici le passage le plus flagrant dans le document en question :

« Il n'y a pas de preuves scientifiques à ce jour démontrant que la thérapie visuelle, les lunettes d'entraînement, les exercices de poursuites et de saccades, les exercices perceptuels, les lunettes grossissantes, les filtres ou les lentilles colorées ainsi que les prismes peuvent significativement améliorer les performances de l'enfant ayant des troubles d'apprentissage. Ces approches peuvent donner de faux espoirs aux parents et autres intervenants et de ce fait, possiblement retarder une intervention ayant un meilleur potentiel bénéfique pour l'enfant. De plus, les coûts engendrés par ces thérapies sont substantiels et le temps requis pour les effectuer non négligeable. Les études statuant sur l'amélioration des apprentissages via ces thérapies sont en fait des études non contrôlées scientifiquement ou encore basées sur des cas anecdotiques. Les bénéfices avancés seraient plutôt secondaires aux autres traitements éducationnels traditionnels souvent effectués de façon combinée avec ces thérapies visuelles et/ou à l'effet placebo de tels procédés. »

Ces conclusions sont basées plutôt sur des essais d'opinion que des études scientifiques, ainsi qu'un recyclage des déclarations de politique des sociétés et organisations américaines en pédiatrie et en ophtalmologie pédiatrique. Ces déclarations offrent aucune recherche originale, ni l'admission d'un vaste corpus de recherches. Ces déclarations ne fournissent aucune preuve appuyant leurs recommandations thérapeutiques pour les difficultés d'apprentissages, tout en demandant l'appui scientifique pour les interventions visuelles, ce qu'ils prétendent être absent. Peut-être la plus flagrante, ils supposent que les patients subissant des interventions optométriques expériencent profit soit de l'effet placebo ou des thérapies éducatives traditionnelles administrés conjointement avec la thérapie visuelle. Cependant, la plupart des patients subissant la thérapie visuelle optométrique ont déjà reçu des thérapies éducatives et sont arrivés sous la garde de l'optométriste pour les problèmes d'apprentissage à base visuelle précisément pour le fait qu'ils ne réussissaient pas à un niveau attendu suivant des thérapies pédagogiques traditionnelles. Si l'effet placébo était contributeur, il l'aurait été plus tôt dans le cycle d'intervention.

En résumé, ce document dans la RCO perpétue l'idée fausse que les interventions visuelles ne sont pas fondées scientifiquement contrairement aux thérapies éducatives traditionnelles. Il met en place un argument d'épouvantail où on dit que la thérapie visuelle ne guérit pas la dyslexie, alors que les partisans de la thérapie optométrique n'ont jamais prétendu ceci. L'article revoit sélectivement la littérature afin d'arriver à des conclusions qui semblent être biaisées et préconçues, et il rejette toute autre source de littérature appuyant une approche thérapeutique plus balancée. L'article semble appuyer une approche multidisciplinaire mais il banalise le rôle de l'optométrie. Une telle approche à la thérapie rend un mauvais service aux élèves et aux parents parce qu'elle positionne la vision dans la marge, et pire dans certains cas lorsque la discussion est fabriquée pour suggérer que la vision est accessoire à la performance académique. En contraste à ce papier, des revues de littérature plus équitables et balancées sur ce sujet sont disponibles, y inclus ce papier de politique du 'American Academy of Optometry' regardant le soin optométrique pour l'étudiant en difficulté: http://www.aaopt.org/sites/default/files/Revised%20Oct%2018_BVPPO_Position_paper%20AAO%20website%20formatFINAL.pdf

Written by Julien Goyard Ruel, O.D. in response to « Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles : quelles sont les évidences scientifiques. » by the optometrists Amélie Ganivet and Isabelle Denault, and the ophtalmologists Rosanne Superstein et Nicole Fallaha. Published in the Canadian Journal of Optometry in december 2014.

After reading the article, it seems to me that there is some incompatibility between the complexity of the subject and the point of view used to get to conclusions. In learning disorders, it is very hard to define the point where normal turns into pathologic. The complexity of the disorders prevents the possibility of isolating one variable from the other as well as of simplifying the treatment concept sufficiently to apply it uniformly to all individuals. With the obvious presence of unexplained visual symptoms in learning disorders, is it a responsible approach to discourage the few professionals who are interested in clinical possibilities?

The precise causes of dyslexia are, for the moment, hypothetical. We suppose that there is a genetic element involved but nobody can deny the importance of environmental influences. In addition to the phonological theory, observations support theories including cerebellar dysfunction and implication of the magnocellular pathway. Since these are influenced by vision, why would we deny interest coming from the disciplines of ophthalmology and optometry? Diagnosis of dyslexia requires a significant delay in development as well as other delays before the involvement of available therapy. If the optometrist can train the involved systems before it is shown to be problematic, it is hard to admit that he should not.

Conclusions in the last part of the article appear contradictory. It is said that precocious detection is essential. Is it not one of the vision care professional's responsibilities to evaluate reading capacity? Should we not encourage optometrists to get involved in multidisciplinary teams who do the evaluations? It is also said that the learning-disabled children should be redirected to the appropriate therapist. It would have been interesting to define who are the said appropriate therapists and what the optometrist should do in order to make sure that his patient has access to those resources. It is also repeated that cycloplegic evaluation is important to rule out any significant hyperopia. Does that mean that diminishing visual effort will help when dylexic manifestations are found? We could also note the fact that almost all the treatments of the binocular system are unproven. Strabismus surgeries, as an example, imply high cost to society but have not been proven better than placebo. Should we reconsider them then? The article concludes that it is recommended for visual therapies to be justified scientifically. By whom and how can such justification be developed if it is not recommended for optometrists to include them in their practice?

There is no obligation for teaching institutions and hospitals to get involved in every single subject concerning their field of practice. Despite this, those institutions have the power to chose which specializations will be taught to future workers. Does that mean that they should standardize the practice done outside their walls? Can they discredit research about whose foundation they remain largely uninformed? Many practitioners are reported treating successfully learning disorders using concepts linking ocular proprioception, spatial localisation and body balance. This science is, more than ever, a part of higher education in various countries like the United States or France.

There is no vision without movement. It is true concerning the retina. It is true concerning development of the brain. It is also true for our profession. Any discipline that fails to involve its members in the search for new possibilities, that fails to encourage them to be curious and creative, will not survive. Theory that the optometrist has to interpret each day needs to be adapted to each patient case. Can we afford to wait, without exception, for our tools to be submitted to large-scale studies before using them? Asking the question is answering it. The survival of a population depends on its diversity. Why would some people nip ideas in the bud? The article would seem to be more political than scientific. Let us stay aware in order to keep open minds allowing for expansion in our practice. We maybe have the potential to help young patients who have to face what are undeniably limited resources to cope with their disorders.

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Rédigé par Julien Goyard Ruel, OD, en réponse à « Diverses modalités de traitement des troubles d'apprentissage scolaire par thérapies visuelles : quelles sont les évidences scientifiques. » par les optométristes Amélie Ganivet et Isabelle Denault, et les ophtalmologistes Rosanne Superstein et Nicole Fallaha. Article paru dans la Revue canadienne d'optométrie, en décembre 2014.

Suite à la lecture de l'article, il me semble y avoir discordance entre la complexité du sujet abordé et l'angle utilisé pour tirer des conclusions. En ce qui a trait aux troubles d'apprentissage, la frontière entre pathologie et normalité est encore mal définie. La nature complexe des désordres à traiter ne permet pas toujours d'en isoler une composante et de simplifier le traitement au point de pouvoir l'appliquer à chaque individu de manière uniforme. Constatant l'association fréquente de symptômes visuels avec les troubles d'apprentissage, est-il responsable de tenter de décourager les quelques professionnels qui s'intéressent aux possibilités cliniques?

Les causes de la dyslexie demeurent pour l'instant hypothétiques. On suppose une part génétique, mais on n'exclut pas l'influence de l'environnement. Outre la théorie phonologique, on suspecte des implications dans les systèmes cérébelleux et magnocellulaires. Ces deux derniers étant influencés par la vision, pourquoi ne pas voir l'intérêt manifeste pour l'optométrie et l'ophtalmologie? Le diagnostic de la dyslexie demande près de deux ans de retard et d'autres délais sont nécessaires pour obtenir sans frais les soins disponibles. Il ne faut pas non plus oublier les nombreux patients qui rapportent devoir faire des efforts exagérés en lecture, mais qui n'auront jamais accès aux ressources orthophoniques parce qu'ils n'auront pas de diagnostic. Si l'optométriste a le pouvoir d'entraîner les systèmes suspects dès les premiers symptômes afin d'améliorer l'efficacité visuelle, difficile d'admettre qu'il ne doive pas le faire.

Les conclusions de l'article conduisent à plusieurs questionnements. On dit que la détection précoce de la dyslexie est essentielle. N'avons-nous pas une responsabilité concernant l'évaluation des capacités en lecture? Pourquoi ne pas encourager l'optométriste à s'impliquer dans l'équipe multidisciplinaire qui fera l'évaluation? Il est aussi dit qu'il faut référer les enfants limités dans leur apprentissage vers les professionnels appropriés. N'aurait-il pas été intéressant de mieux définir ces ressources et d'expliquer aux optométristes comment en faire profiter leurs patients? D'autre part, les auteurs répètent l'importance de la cycloplégie afin d'exclure toute hypermétropie significative. N'est-ce pas admettre que la diminution de l'effort visuel peut être nécessaire à l'efficacité de la prise en charge des manifestations dyslexiques? En ce qui a trait aux données probantes, il est aussi important de noter que l'ensemble des traitements touchant la binocularité sont très difficiles à prouver scientifiquement. On peut prendre l'exemple des chirurgies de strabisme. Elles comportent certains risques et sont coûteuses pour la société. Devrions-nous les reconsidérer tant qu'elles ne seront pas soumises avec succès à des études contre placebo? Enfin, l'article se termine en disant qu'il est recommandé que les thérapies visuelles soient scientifiquement justifiées. S'il est déconseillé aux optométristes de les inclure dans leur pratique, comment est-ce réalisable?

Les institutions d'enseignement et les hôpitaux n'ont pas l'obligation de s'intéresser à toutes les sphères impliquées dans le domaine qui les concerne. Ils ont le pouvoir de choisir les spécialisations qui seront enseignées aux futurs travailleurs. Mais la question se pose, ont-ils le droit de tenter d'uniformiser la pratique lorsque cette dernière ne se fait pas à l'intérieur de leurs murs? Devraient-ils faire preuve de réserve avant de discréditer certaines idées dont ils connaissent peu les principaux fondements? De nombreux succès cliniques sont rapportés par des professionnels de la vision tenant compte des principes du sens de l'équilibre, de la proprioception oculaire et de la localisation spatiale. Ces concepts sont enseignés dans plusieurs universités, notamment en France et aux États-Unis.

Il n'y a pas de vision sans mouvement. L'idée peut s'appliquer aux influx nerveux rétiniens. C'est aussi vrai concernant le développement du cerveau. Ce l'est tout autant pour une profession, qui doit voir sa pratique selon différents angles pour mieux faire face à l'avenir. Si elle n'arrive pas à susciter la curiosité et la créativité de ses membres, elle ne pourra traverser le temps avec succès. La survie d'une population dépend de sa diversité. La théorie que l'optométriste doit interpréter chaque jour doit être adaptée à chaque cas unique rencontré. Peut-on attendre, sans exception, que les moyens disponibles soient soumis à des études à grande échelle? Poser la question c'est y répondre. Pourquoi donc vouloir ainsi supprimer des avenues pleines de potentiel? L'article, ainsi que certains choisis en référence, pourraient donner l'impression d'être mus par des motifs politiques plutôt que scientifiques. Soyons vigilants à préserver l'ouverture d'esprit qui nous permettra d'étendre nos champs de pratique. Nous avons le potentiel d'aider de jeunes patients qui possèdent, quoi qu'on en dise, des ressources limitées pour s'adapter aux désordres qui les touchent.

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Ocular Prosthesis: Indications to Management

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Abstract

Caring for patients with a prosthetic eye can be a challenge to clinicians. Regardless of the circumstances leading to eye removal, inspection of the underlying tissue should be part of a comprehensive eye exam. Maintaining the overall health of the anophthalmic socket is critical in patient comfort and optimal prosthetic fit. Discussions will focus on anophthalmic procedures and preparation of the socket for prosthetic fitting. Care and management of the prosthesis and the anophthalmic socket, including associated ocular tissue disorders will be emphasized. The article will enhance the clinician's comfort level managing patients wearing ocular prosthesis.

KEY WORDS: ocular prosthesis, enucleation, evisceration, exenteration, orbital implants

Résumé

Le soin des patients qui ont une prothèse oculaire peut poser un défi aux cliniciens. Quelles que soient les circonstances à l'origine de l'ablation de l'œil, un examen complet de la vue doit inclure l'inspection des tissus sous-jacents

Il est crucial de maintenir la santé générale de la cavité orbitaire anophtalmique pour le confort du patient et l'ajustement optimal de la prothèse.

Les discussions porteront sur les interventions anophtalmiques et la préparation de la cavité orbitaire pour l'ajustement de la prothèse. On mettra l'accent sur le soin et la prise en charge de la prothèse et de la cavité orbitaire anophtalmique, y compris les troubles des tissus oculaires connexes. L'article permettra aux cliniciens qui traitent des patients portant une prothèse oculaire de se sentir plus à l'aise.

BACKGROUND

The need for an ocular prosthetic device knows no boundaries. The population that can be affected by ocular disease or trauma is not dictated by age, sex or race. Regardless of the mode of practice, the clinician will likely see patients who have had an anophthalmic procedure, the vast majority of whom will be wearing an ocular prosthesis. Because complications may arise with either the prosthetic eye wear or the anophthalmic socket, it is important for the eyecare provider to have a firm understanding of management of these cases, as well as when to make appropriate referrals to the ocularist and the ophthalmic surgeon.

SURGICAL PROCEDURES

To understand the complications associated with prosthetic wear, one must first understand anophthalmic procedures. The three main surgical techniques used in the partial or complete removal of the eye are evisceration and enucleation, respectively, which are the most common, and exenteration which is the least common. Having a grasp of the indications, procedures and outcomes involved with each of these surgeries helps to educate patients and to manage expectations prior to their meeting with the surgeon.

Enucleation involves the complete removal of the globe, along with a portion of the optic nerve, while maintaining the surrounding orbital tissue. This provides the surgeon with a large, intact histological specimen for review, which is particularly important for patients with a known intraocular malignancy in which non-surgical treatment options have either failed or are not an option and in which the eye cannot be preserved.[1] Intraocular tumors have become the primary indication for enucleation and would include, but are not limited to, retinoblastomas and uveal melanomas.[1,2,3,4,5,6] For patients presenting with phthisical eyes of unknown etiology but which require removal of the eye, enucleation would once again be the procedure of choice.[1] In these cases, it is assumed an underlying malignancy may have caused the degeneration, requiring entire removal of the globe. Other indications for enucleation include severely traumatized eyes[5] which may be at risk for sympathetic ophthalmia. Early enucleation is a point of contention amongst eye care providers because of the infrequent incidence of sympathetic ophthalmia, ranging from 0.001% to 2.0% of traumatized eyes[5], as well as the uveitis management options available.[5,7,8,9,10] While traditionally enucleation would be the anophthalmic procedure of choice in sympathetic ophthalmia, some studies are finding that evisceration may also be a viable option.[8,9] Patients with chronic pain due to end stage neovascular glaucoma or chronic uveitis may undergo either enucleation or evisceration.

On an outpatient or inpatient basis, the enucleation procedure is usually performed under general anesthesia, but can be performed under local anesthesia with a retrobulbar block alone in warranted cases.[5,11] After the conjunctiva and Tenon's capsule are dissected, the extra ocular muscles are tagged with a stitch and transected from the globe, and the optic nerve is severed, allowing for removal of the intact globe. To increase the chance of complete removal of the known or suspected cancerous tissues, a large portion of the optic nerve is usually removed.[5] There is a risk of ptosis and extra ocular muscle damage during enucleation because the optic nerve is transected near the orbital apex.

Due to so much of the natural orbital volume being lost, an orbital implant is then introduced into the remaining space via a transducer. The extra ocular muscles are reattached to the orbital implant and Tenon's capsule and the conjunctiva sutured. An antibiotic ointment is instilled and a conformer, which helps maintain the conjunctival space, is then placed over the tissue. The area is then pressure patched for 24-48 hours.[5,11] Appropriate analgesics are prescribed for patients, who typically will encounter some pain and headache for the first few days. Once the pressure patch is removed, an antibiotic or antibiotic/steroid combination ointment is usually applied twice a day for one week.[5,11] At one week post-surgery, the conformer is briefly removed for inspection of the remaining ocular tissue for signs of infection and for assurance of proper healing.

Evisceration differs from enucleation in that it involves the surgical removal of the contents within the globe, while preserving the sclera, extraocular muscles and optic nerve. Indications for evisceration typically include blind, painful eyes found in such cases as chronic uveitis or

neovascular glaucoma, as well as those with corneal perforation. Important indications with evisceration are patients with endophthalmitis requiring anophthalmic surgery. There is decreased risk of spreading the infectious material through the dura into the intracranial spaces since so much of the orbital tissue remains intact during this procedure. Currently there is debate on whether enucleation can also be performed in these situations, particularly since the literature suggests an increased risk of sympathetic ophthalmia following evisceration.[12] However, evisceration continues to be the procedure of choice among surgeons in the majority of these cases.[6]

The evisceration procedure involves an incision near the limbus, with the cornea either removed or flapped, after which the surgeon removes the inner contents of the eye through the use of an evisceration spoon. The internal aspect of the sclera is cauterized and treated with absolute alcohol to denature any residual proteins, decreasing the risk of sympathetic ophthalmia. As with enucleation, the lost orbital volume is replaced with an orbital implant and the sclera and conjunctiva are then sutured. Unlike enucleation, there is no need for extra ocular muscle reattachment because they were left undisturbed. An antibiotic ointment and a conformer are then placed over the area and the eye is pressure patched, with much of the post-operative care mimicking that of enucleation.

Figure 1. *Healthy anophthalmic socket*

The short term goals after both enucleation and evisceration are deep fornices to hold the conformer and eventually the prosthesis, a socket lined with healthy conjunctival membranes, and a normal appearance of the lid. (Figure 1) The aforementioned conformer plays an important role in the eventual successful fit of the prosthesis by not only helping to stabilize the implant during the healing process, but by also reducing the risk of tissue contracture of an anophthalmic socket. Typically the conformer is made of either acrylic or silicone and is left in the conjunctival fornices for 4-6 weeks[5] helping to maintain the space that will eventually accommodate the prosthesis.

The eventual cosmetic success of the overlying prosthesis is also largely due to the orbital implant introduced into the socket during enucleation and evisceration. During surgery, the surgeon can use a sizing sphere to determine the appropriate size; typically a 20mm sphere for adults.[11,13] The appropriate sized sphere helps create tension free closure of Tenon's capsule and conjunctiva,[11] minimizing complications post operatively. In addition to replacing the lost volume occurring during surgery, an orbital implant maintains the orbital structure and reduces scar formation. The implant either directly or indirectly helps to impart movement to the overlying prosthesis, as is the case with enucleation and evisceration respectively, or therefore contributes to the ultimate goal of having a prosthetic eye that looks and moves similarly to the contralateral eye.

Exenteration is a procedure involving removal all of the tissues within the socket and the entire orbit, typically including the conjunctiva, globe, orbital fat, part or all of the lids and sometimes a portion of the bony orbit. This most radical of procedures is reserved for patients with large, highly invasive orbital tumors which may have originated from within the orbit or from the surrounding orbital structures.[14] These tumors can be highly destructive, and may have the capacity to extend into the intracranial spaces, proving eventually fatal for patients. Many of these patients have a history of malignant tumors of the eye lids, often squamous cell carcinomas and basal cell carcinomas[15,16,17,18] as well as other highly invasive tumors of the conjunctiva, intraocular structures and orbit[14] including intraocular malignant melanomas that have extended outside of the globe and which may not have responded to non-surgical treatment options such as radiation and chemotherapy.[1,19]

Patients who have undergone exenteration often require long term use of a combination antibiotic and steroid ointment, as well as long term analgesics for management of chronic orbital pain. Depending on the extent of tissue and bony areas removed, there may be long-term complications of sinusitis, ear problems, orbital cyst ingrowth, infection and malignancy recurrence. There is also the strong possibility of psychosocial issues that go along with losing such a large, obvious portion of the face. Some patients will decide to use a facial prosthesis but many find the facial adhesive used to be highly irritating and often discontinue use. There have been some strides made with the use of titanium osseo integrated implants to which the prosthesis is attached by magnets or clips.[15] Another alternative that patients may opt for is the spectacle mounted facial prosthesis. (Figure 2) Overall the use of a facial prosthesis is limited, with most patients preferring to patch the area[15] and also because of the mortality rate associated with recurrence of the malignancy.

Figure 2. *Spectacle mounted prosthesis.*

ORBITAL IMPLANTS

Orbital implants are typically made of either non-porous or porous materials. (Figure 3) Non-porous alloplastic implants can be comprised of varied inert materials, including the more commonly used silicone and polymethyl methacrylate (PMMA).[6] These materials are made into solid, spherical implants that are well tolerated, have a low extrusion risk and are a good choice for implants that will not be integrated, or pegged. These materials are especially important for patients who have had infections in which porous implants are no longer an option. To decrease the risk of implant migration and to improve motility, the implant can be wrapped in a material such as donor sclera, providing the option of direct extra ocular muscle attachments, depending on the surgery performed.

Porous materials, also known as biocompatible or biointegrated materials are now more commonly used as the initial implant material with porous polyethylene, hydroxyapatite and aluminum oxide being the most common.[6,11,20,21] Due to the porous nature of these materials, fibrovascular ingrowth occurs, allowing for improved implant stability as well as decreasing rejection risk. Porous polyethylene is a smoother, softer material to which the extra ocular muscles can be directly attached during enucleation.[5,13] In contrast, hydroxyapatite creates a rough, abrasive surface. To protect the overlying

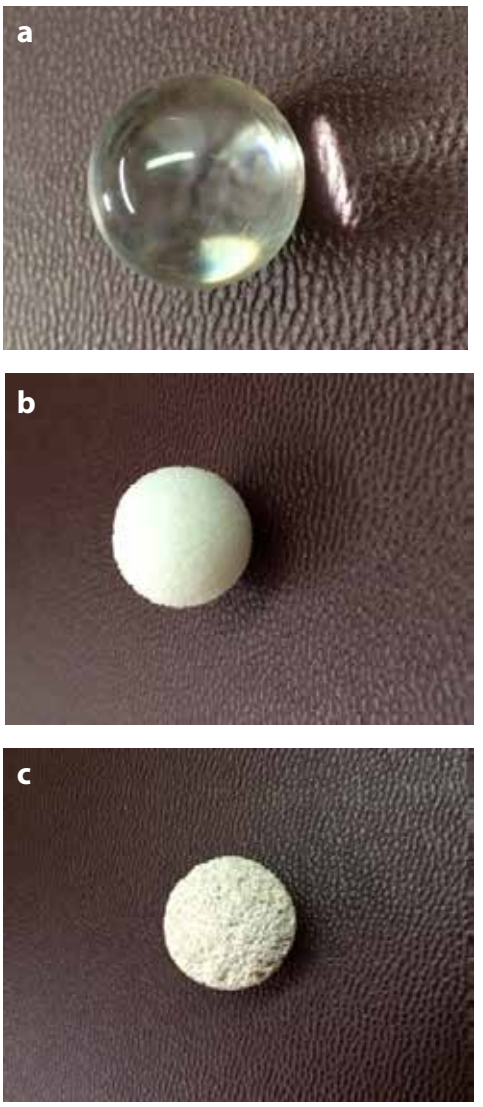

Figure 3. *Various orbital implant materials. a) polymethyl methacrylate (PMMA) , b) porous polyethylene), C) hydroxyapatite*

Figure 4. *Peg*

tissue and to serve as a scaffold for reattachment of the extraocular muscles, the hydroxyapatite implant is wrapped in materials ranging from donor sclera or autologous tissue to synthetic vicryl or polyglactin mesh.[5,21] Aluminum oxide as an implant material is gaining popularity due to its relative lower cost, as well as suggested excellent biocompatibility.[21]

The use of a porous orbital implant allows for the optional integration of the implant with the overlying prosthesis by incorporating a peg. (Figure 4) This involves an additional procedure performed typically 6 months or more after the initial anophthlamic surgery.[5,21] A fairly quick procedure done under local anesthesia, the surgeon will open the conjunctiva and use a specialized tool to bore a hole into the implant. A sleeve is then placed into the opening to serve as a docking station for the peg to sit. Afterwards, the ocularist will modify the posterior portion of the patient's prosthesis. The goal is to have the peg sit flush with the implant offering the possibility of a better range of movement of the overlying prosthesis. Pegging of the orbital implant also helps decrease the weight on the lower lid, decreasing the chance of lid sagging. Aside from having an additional surgical procedure, disadvantages include the risk of infection and chronic discharge from implant exposure, as well aberrant movement of the prosthesis secondary to improper peg placement. There are studies being conducted looking at using pegs from the initial onset of anophthalmic surgery, as well as exploring quasi-integrated orbital implant designs in which the posterior prosthesis combines with the anterior portion of the orbital implant in a "lock and key" fashion.[21]

FABRICATION/CARE OF OCULAR PROSTHESIS

After the wound has healed, approximately six to eight weeks after surgery, an ocular prosthesis can be fitted.[22,23] A prosthetic device can be fabricated in two forms, a scleral shell or a full thickness prosthesis. A scleral shell is fit over a phthisical eye and a full thickness prosthesis is fit over the anophthalmic socket.[24] (Figure 5, 6) The patient should be reassured that this is a pain free process. The time to produce a custom fit prosthetic device will be dependent upon the number of modifications that need to be made. An average time is about one week.

Figure 5. *Ocular prosthesis made from acrylic*

Prosthetic devices can be fit either from a stock set of pre-fabricated eyes or can be custom made. Ideally, a custom made prosthetic eye is preferred to increase stability and aid in movement as the contour of the anophthalmic socket is taken into consideration.[25] There are various materials and methods used in the fabrication of a prosthetic device. The materials used today vary from the prosthetic device of the past. Glass, although still used in some areas of Europe, has given way to more durable materials, such as poly methyl-methacrylate which is chosen for its durability, biocompatibility, availability and cost.[24,25] The fitting method chosen is at

Figure 6. *Ocular prosthesis: right eye. Note matching iris color and scleral hue.*

the discretion of the ocularist. One of the most common fitting techniques is the impression fitting.

The impression fitting method involves injecting alginate material directly into the patient's orbit using an impression tray.[24,26] When the substance hardens, it is removed from the orbit and then can be adjusted to form the front surface of the device using wax. The iris and pupil are then positioned taking into account the appearance of the fellow eye. The mold is then filled with methyl-methacrylate resin that is liquid acrylic. Various instruments are used to eliminate the formation of air pockets within the plastic. The mold is then heat treated to harden the liquid. After this stage, the device is hand painted to reflect the unaffected eye.[26] Although fabrication techniques vary, a prosthesis that is customized is preferred over stock eyes that have not been modified in any way. Improvement in comfort and cosmesis can be achieved as each anophthalmic socket is unique.[27] (Figures 7, 8, 9)

Regardless of the method used to create the prosthetic device, at each eye exam, the device should be removed from the patient's socket and inspected for defects. Removal of the prosthetic device is similar in fashion to the removal of a hard contact lens. A suction device, typically larger than that used with a hard contact lens, can be used to insert and remove the device easily. In the event that a suction device is unavailable, the practitioner, as well as the patient, should be comfortable with digital manipulation of the prosthesis.[25] When using the fingers for removal, the prosthesis should be pushed up over the lower eyelid. This will allow the device to slide out from the bottom. Conversely, when inserting the device, the top should be inserted first by pushing up under the upper eyelid and sliding the lower part under the lower eyelid. The superior portion of the prosthesis is typically thicker and larger than the lower portion to aid in maintaining superior lid position and can also help with orientation during insertion.[27]

General eye care for the patient wearing a prosthetic device requires a detailed history of the patient's wearing habits and how often and in what manner the device is removed and cleaned. The practitioner should ask how old the current device is and how often he/she sees the ocularist. A general guide for prosthesis replacement is approximately every five years to accommodate for changes to the socket.[23] It is recommended that patient should see the ocularist every six months for polishing and adjustments to the device at least annually.[23,24]

To ensure a comfortable fit, inspection of the prosthesis is important. The device should be smooth and free of sharp edges. If the device does not feel smooth, it can be washed with soap and water or gas permeable contact lens solution. If it continues to feel rough, then the device likely requires polishing, contouring or replacement.[23] Polishing of the ocular prosthesis, unlike polishing of a gas permeable contact lens, cannot be done in office and requires a referral to the ocularist. Contouring to ensure proper fitting in the changing socket requires specialized equipment and also requires the ocularist's expertise.[23] (Figures 10, 11)

Figure 7. *Cast used to make custom prosthesis.*

Figure 8. *Use of Carver press to remove air from custom prosthesis prior to hardening.*

Figure 9. *Custom prosthesis after curing process upon removal from mold.*

Figure 10. *Modification of prosthetic device.*

Figure 11. *Polishing the prosthesis.*

In addition to inspection of the prosthetic device, the patient should be questioned regarding care of the device. Because ocular prosthetics are custom made, care is custom as well. What may be standard for one patient could be completely different for another. The patient should limit the removal of the prosthesis. Removing the device too often can lead to increased mucous production and irritation of the orbital tissue. The device should be left in place and only removed for cleaning approximately once per month.[22,23] The recommendation for cleaning the prosthesis will be dependent upon the mucous and protein deposition. The prosthesis can be cleaned with soap and water, baby shampoo and water, or gas permeable contact lens cleaner.[23, 24]

COMPLICATIONS

In addition to inspecting the device, it is important for the eye care provider to inspect the ocular tissue for pathology. The most common ocular tissue disorders encountered include discharge, dry eye, discomfort, implant exposure, pain, ptosis, lid laxity, expulsion, adhesions and problems associated with the peg.[28]

DISCHARGE

Discharge can be caused by mechanical irritation or infection. In a study conducted by Pine, et al. 93% of prosthetic eye wearers reported watering, discharge and crusting at some time during prosthesis wear with 60% reporting these symptoms daily.[29] Just as would be done for a patient with a seeing eye, the color of the mucous is important. A white, stringy discharge typically represents mechanical irritation and/or allergy. Inspect the tissue for signs of giant papillary conjunctivitis. Alford recommends prednisolone acetate 1% three times a day for fourteen days for advanced cases and cromolyn sodium or topical NSAIDs for less severe cases.[22] To reduce the incidence of recurrence, question the patient about his/her cleaning habits and recommend alternatives. Discuss the use of lubricant drops and determine the last time the device was professionally polished.

The presence of green or yellow discharge in conjunction with red orbital tissue with or without an odor can signify an infection. A course of topical antibiotics should be initiated while recalcitrant cases should be cultured. The fellow eye should always be examined with or without suspected infection. As with any infection or inflammation, treat appropriately with drops and/or ophthalmic ointments to combat the response and consider having the device polished.

DRY EYE

Dry eye is a common symptom among prosthesis wearers. Recommendations for treatment will be dependent on the severity of the patient's symptoms. A mild dry eye can be treated with viscous ocular lubricants three to four times a day. Just as with the sighted dry eye patient, a lubricant with longer lasting power may be needed. In that case, bland ophthalmic ointment or silicone oil should be used. Bland ophthalmic ointment can be placed in the upper or lower cul-de-sac. This is determined by patient preference or how shallow the inferior portion of the prosthesis fits in the lower orbital area. If the lower orbital area is shallow, inserting ointment in the upper eyelid area may insure the prosthesis does not become displaced by manipulation of the lower lid. Many patients find 100% medical grade silicone oil to be a comfortable lubricant. It lasts longer than the viscous artificial tears, yet is thinner than the ointment. Silicone oil can be easily purchased by the bottle or box online from various companies.

A small sample study concluded that cyclosporine A 0.05%, (Restasis, Allergan), has shown subjective improvement in ocular comfort in prosthetic wearers.[30] This finding lends itself as a possible option for those with dry eye complaints in which conventional artificial tears were not successful. Larger cohort studies are necessary to determine both the long term benefit and cost consequence of using cyclosporine A drops in this population. This finding may be an additional benefit if blepharitis and meibomian gland dysfunction are found as these often contribute to dry eye. If after addressing the aforementioned dry eye and/or eyelid findings the patient continues to experience symptoms, a professional polish must always be considered.

OCULAR DISCOMFORT

Ocular discomfort or pain while wearing the prosthesis can lead to an inability in wearing the prosthesis successfully and requires the clinician to observe both the device and the orbital area. If there are no defects found in the hardware itself, the orbital tissue in and around the socket must be scrutinized; several reasons must be considered including malignancy, systemic disease, contracted socket syndrome and implant exposure. In these cases, a thorough history including why the patient lost the eye, details about the ophthalmic surgical history, overall systemic health, and wear schedule for the device can aid the clinician in making the proper diagnosis.

If anophthalmia was from a malignancy, then tumor growth or metastasis posterior to the implant must be considered. Systemic disease such as thyroid eye disease may cause the prosthesis to not fit into the orbit properly. Since the patient's extraocular muscles are typically preserved, the implant may be pushed anteriorly causing a shallow orbit and an ill-fitting prosthesis. In these instances, a referral to the patient's primary care physician or oncologist is in order.

Figure 12. *Adhesion of puncta.*

Contracted socket syndrome can be another cause of an improper fit. This syndrome causes the conjunctiva to tighten as a result of inflammation and fibrosis.[31] This can occur if a patient is not wearing the prosthesis as directed or as a result of direct trauma, surgical insult, burns, cicatricial disease or irradiation.[23] Surgical intervention is required in these cases. Typically mucous membrane grafting is the treatment of choice; however recent studies suggest the use of amniotic membranes to reconstruct the orbit, post-auricular full thickness skin grafts or microvascular radial forearm free flaps with successful repair.[32,33,34] In addition to contracture, adhesions can form within the tissue of a patient not wearing the prosthesis properly. Tissue such as the eyelids, conjunctiva and puncta may adhere to each other making the area unable to hold the prosthesis in place properly and also causing expulsion. Surgical correction of the adhesion will allow for proper refitting of the prosthetic device. (Figure 12)

If pain ensues due to implant exposure, measure the size of the defect. Exposure can occur at any time post-anophthalmic surgery and must be looked for at each visit. It has been noted with porous implants, exposure between three and twelve months post-op can be due to poor surgical technique, infection, inflammation, inadequate tissue healing or erosion of tissue over the implant or pressure from the prosthesis. Exposure after two years was most likely from pressure from the prosthetic device and friction from both mechanical and inflammatory sources.[13] Jordan also noted a 2mm defect found four weeks after surgery that closed spontaneously over a two week period. However, if the tissue surrounding the exposure appears infected or infection is a concern, antibiotics drops may be used. Additionally, alterations in the prosthesis should be considered to allow for an improved fit over the affected area. Defects persisting beyond six to eight weeks require a consultation with the surgeon as grafting may be necessary to close the wound.[29]

LID COMPLICATIONS

Ptosis and lid laxity are common problems encountered by this population as well. Ptosis can be alleviated by lifting the superior edge of the prosthesis allowing it to fit under the levator to improve lid position. If this has been done several times or if the prosthesis is not fit properly or

worn in the appropriate manner, lifting the edge will no longer lift the lid. In these cases, referral to the surgeon should be made for repair. If the ptosis is suspected to be related to the contracted socket, repair of the orbital volume may correct the ptosis in 30% of cases according to Jordan.[28] If the ptosis is due to lid laxity, a study conducted by Mombaerts and Groest,[35] suggests that a preparatory prosthesis can be used to align the pupils prior to ptosis surgery to alleviate moderate to severe ptosis.

PEGGED IMPLANTS

There are some problems intrinsic to those fitted with a peg. Examining the tissue surrounding the peg and the peg itself is extremely important in these patients. It has been estimated that patients receiving a free standing polycarbonate peg had a complication rate of approximately 71%.[36] Notable complications include: pyogenic granuloma at peg site, loose pegs, conjunctival overgrowth and peg extrusion. If the peg is broken, it will not align properly with the posterior surface of the prosthesis and will not stay in place or move properly. Conjunctival tissue may begin to grow over the peg causing interference with the flush posterior surface of the prosthesis and would need to be corrected surgically. Similarly, the conjunctiva may also regress around the peg causing exposure near the sleeve making the peg loose and increasing the patient's likelihood of infection. Any of these processes would need referral for surgical evaluation. (Figure 13)

Figure 13. *Inflammation caused by peg complication.*

CONCLUSION

Overall working with anophthalmic patients is rewarding when the clinician is comfortable looking for the signs of complications due to underlying ocular tissue or socket disorders and device irregularities. To provide the patient with the most comprehensive eye care, the most important procedure is removal of the device for inspection of the tissue and prosthesis, treat the underlying tissue disorders and/or refer to the appropriate specialist be it the ocularist or the surgeon.

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Seeing Clearly: A Community-Based Inquiry Into Vision Care Access For a Rural Northern First Nation

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Abstract

There are a variety of barriers to eye-care service access in rural Northern First Nations communities. Semi-structured, opened-ended key informant interviews were conducted on the topic of eye care, with eight First Nations individuals employed by the health office in a small Northern British Columbian First Nations community. Data analysis comprised identifying themes by analyzing similarities and dissimilarities in participants' narratives, including comparing and contrasting viewpoints of participants and placing themes within broader sociocultural and historic contexts. Themes identified in the data included the current state of community eye care, facilitators and barriers to accessing eye care, and community needs and preferences. The theme of "facilitators and barriers" was further analyzed, resulting in subthemes of awareness, attitudes, social, economic, and service related. Better understanding of the barriers and their interactions would provide a foundation upon which innovative eye-care programs might be developed.

KEY WORDS: First Nations, British Columbia, Aboriginal, eye care, access, barriers, social determinants

Résumé

Toutes sortes d'obstacles nuisent à l'accès aux services de soins oculovisuels dans les collectivités des Premières Nations du nord rural. On a procédé, auprès de personnes-ressources clés, à des entrevues semi structurées et ouvertes qui ont porté sur les soins oculovisuels et huit personnes des Premières Nations employées par le bureau de santé d'une petite communauté des Premières Nations du nord de la Colombie-Britannique y ont participé. L'analyse des données a consisté à dégager des thèmes en analysant les similitudes et les différences entre les exposés des participants, à comparer les points de vue des participants et à placer les thèmes dans leur contexte socioculturel et historique plus général. Les thèmes dégagés des données comprenaient l'état actuel des soins oculovisuels dans la communauté, les facteurs qui facilitent et entravent l'accès aux soins oculovisuels, ainsi que les besoins et les préférences de la communauté. On a analysé plus à fond le thème des « facteurs qui facilitent et entravent », ce qui a dégagé des sous-thèmes comme la sensibilisation, les attitudes, les facteurs sociaux, économiques et liés aux services. Une meilleure compréhension des obstacles et de leur interactions jetterait une assise sur laquelle on pourrait s'appuyer pour élaborer des programmes innovateurs de soins oculovisuels.

INTRODUCTION

The vision health of Aboriginal peoples has gained increased attention over the past decade. This increased concern stems largely from alarmingly high rates of diabetes and the potential for eye-related complications in most Aboriginal communities, which include (as per constitutional recognition) Inuit, Metis, and First Nations peoples across Canada.[1,2] Although Aboriginal eye care and vision health is a growing concern for various organizations, including the Vision Institute of Canada, the National Collaborating Center for Aboriginal Health (NCCAH), and the Canadian Association of Optometrists, little Canadian literature exists on the topic.[3–5] Even less community-based research exists.

Of the existing literature, much is either outdated or quantitative and biomedical in approach.[6] Furthermore, literature produced in the past decade often focuses on eye care in relation to diabetes and to the exclusion of other health realties. Few studies explore Aboriginal eye care as a social issue. Although it is increasingly common for health research, especially in Aboriginal communities, to acknowledge social and historical factors as key determinants of poor health, studies about Aboriginal eye care do not often explore contextual factors, such as the unique geographic, economic, and social landscape of each Aboriginal community.

Some concern is expressed in the literature about members of Aboriginal communities simply under-accessing eye-care services.[1,6] However, the level to which Aboriginal communities, especially northern and rural Aboriginal communities, are underserved remains unknown.[7] A qualitative, community- and research-based approach allows insight into what we suggest are more salient and nuanced factors affecting a community's ability to access eye care. Accessing care is highly influenced by various social determinants, which are recognized by the World Health Organization as the economic and social conditions that are largely responsible for health inequities.[8] Social determinants include factors like income, social support, education, employment conditions, social environments, physical environments, child development, access to health services, gender, culture, and physical health and coping skills.[9] Broadly speaking, social determinants are "the causes of the causes" of poor health, or the factors that interact to influence health status. Income, for instance, affects (especially First Nations') ability to access health services, quality of housing, quality of food, and several other factors that can impact health. Colonialism is a well-evidenced and significant social determinant of Aboriginal peoples' health.[9,10] Historical policies that reach into today, including the Indian Act and "Indian" reserves, have had devastating effects on traditional economies and family systems. Residential schools, resulting in loss of language and loss of culture, are understood as having lasting negative multi-generational effects on the health of Aboriginal communities.

We contend the most appropriate way to study Indigenous use of and access to eye care is by employing a qualitative research approach that accounts for social, cultural, and historical contexts surrounding choices about eye health. A qualitative community-based project was thus designed to explore access to eye care for a rural Northern First Nation in British Columbia. The purpose of this community-based project was to open new spaces for key informants to express thoughts and feelings about access to eye-care services in their communities.

METHODS

The Lake Babine Nation is a First Nation located in Northern British Columbia. It is the third largest First Nation band in British Columbia with a population of over 2,300 people.[11] The nation consists of five communities, three of which are inhabited year round.[12] Each community is uniquely situated in its ability to access care. Woyenne is located adjacent to the Village of Burns Lake and has access to a local optometry clinic. Tachet and Fort Babine are smaller and more remote communities and require an hour or two of travel to access the nearest clinics.

This study was conducted in Woyenne, the largest of the Lake Babine Nation communities. Woyenne is the administrative centre for the Lake Babine Nation and houses both the band office and the health office.

PARTICIPANTS

Aboriginal employees at the Woyenne health office were invited to share their unique perspectives on the provision and access of eye care in their communities. Employees at the health office are originally from various Lake Babine communities and were thus able to offer first-hand knowledge about the communities throughout the Lake Babine Nation. We believed these people might have insight into the challenges faced by the health office and community members, in considering eye-care services. Potential key informants were identified and invited to participate predominantly because a community knowledge holder identified them as playing a role in eye care within the community. The involvement of community knowledge holders is in-line with best practices for conducting community-based research with Indigenous communities.[13] In total, eight individuals expressed interest in participating. We also used some snowball sampling techniques to identify other people who would have relevant experience within the office. The participant sample represented a variety of demographics; six women and two men aged between 20 and 60 years participated. All participants were of Aboriginal descent.

PROCEDURES

Undertaking research with First Nations requires adhering to specific and culturally appropriate protocols, including receiving support from the local band and council government and developing personal relationships to ensure appropriate ethical behaviour. We spent most of our lives in Northern BC, working with and in northern communities, including many First Nations communities and organizations, which ensured many pre-existing connections and relationships. We also received clearance from the institutional research ethics board at the University of Northern BC. After obtaining written consent from the participants, we conducted face-to-face qualitative interviews and audiotaped participants in a location of their choosing in their community of Woyenne. The interview consisted of 13 semi-structured, open-ended questions (Appendix A). The interviews were then transcribed and analyzed for themes. Data analysis consisted of close critical readings of the work. Thematic analysis emphasized discursive systems of power that might be present in the narratives, which allowed us to explore similarities and dissimilarities in the participants' narratives—especially regarding how eye health was socially determined. We also accounted for decolonizing perspectives in order to ensure a privileging of Indigenous storytelling traditions, traditions that often prompt participants to respond to questions from a community perspective and with a more open-ended, sometimes even metaphorical, response to direct questions. Finally, we approached the participants' words as narratives and tried not to extract components of a story told without recognizing the story's social and historical context. Critical race theory informed our approach to the narratives, meaning that narratives were understood to stand on their own, as opposed to being questioned or scrutinized for some objective content of "truth" or "fact."

RESULTS

The key informant interviews yielded three categories of qualitative information (data sets). We categorized the first data set as information pertaining to the current state of eye-care services. The second data set can be summarized as "facilitators and barriers to accessing care." In this second data set, participants' statements were further analyzed to reveal five subthemes: awareness, attitudes, social factors, economic, and service related. We categorized the third data set as that which identified community-specific needs and preferences (Figure 1).

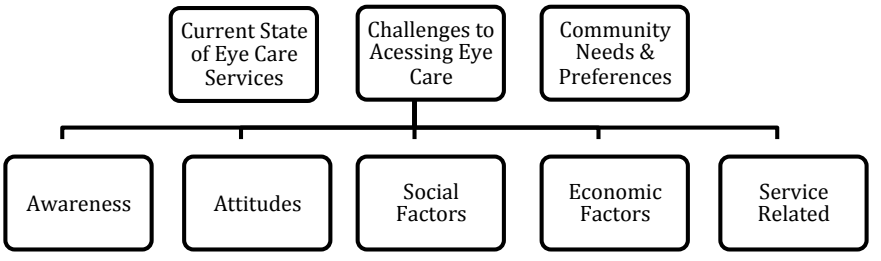

Figure 1. *Themes and sub-themes identified by key informant interviews.*

CURRENT STATE OF EYE-CARE SERVICES

Participants shared their knowledge and opinions about the current state of eye-care services in their communities. Both on-reserve and off-reserve services are available to Lake Babine communities. The health office in Woyenne plans and organizes the on-reserve services for all of the communities. Different participants identified different services, indicating a lack of fully cohesive and centralized knowledge about the services available. Some knew of an optometrist who had recently provided on-reserve eye-care services and others discussed a mobile diabetes clinic that also provided some eye-screening services. Although there are some on-reserve services, they are available at a very low frequency. Local off-reserve clinics are also available, although some travel is required for people living in Tachet and Fort Babine. If secondary care is required from an ophthalmologist, a significant amount of travel is required of members from all communities. Participants expressed varying degrees of knowledge about the services available to the community. They were aware of the off-reserve services available; however, some of the on-reserve initiatives were less well known.

Participants emphasized the distinctness of each of the communities in their nation. Consequently, geography, economic, and social factors uniquely shaped each community's ability to access care. Several participants expressed concern about people's ability from the two more remote communities of Tachet and Fort Babine to access care because of increased challenges around isolation. In particular, barriers such as vehicle access, cost of fuel, leaving family, dangerous roads, and winter driving conditions were all identified as much larger and more pressing considerations for those in the more remote communities. Also, a commonly expressed feeling was that, although residents were aware of services available off-reserve, they tended to wait until such services were offered on-reserve due to travel costs and the stress of leaving their family and community for a potentially long period of time. One participant suggested that community members were specifically waiting for on-reserve care because the health office covers the exam fee. The participant noted that, "right now people are waiting [for a time when] we bring someone [on-reserve]. [They're] waiting so they don't have to pay the exam fee"(Participant 1: Personal communication; interview). Developing an understanding about the current state of eye-care services would allow a deeper understanding about strengths and weaknesses of the current standard, thereby providing an evidence base for improvement.

FACILITATORS AND BARRIERS

We analyzed and categorized the barriers thematically to provide a summary of specific challenges faced by the communities. Further exploration of each theme, based on statements made by the participants, provides unique insights both into individual beliefs and more generalizable opinions. The details provided from the interviews helped to identify specific issues that might be addressed in order to improve access to care. We identified the following five types of barriers: awareness, attitudes, social factors, economics, and service-related barriers. We explore these in depth, here.

AWARENESS

Awareness is a major determinant in accessing care. In short, one has to be aware of a service in order to access it. Service awareness, eye-care insurance awareness, and awareness about the importance of eye care can influence if and how a person accesses care. Participants generally felt there was some awareness about the services available. However, the question surrounding the frequency and location of services elicited significantly varied responses, suggesting that awareness might not be as high as the participants perceived. Another awareness barrier was lack of knowledge about how non-insured health benefits (NIHB) function. The significant gap in awareness regarding NIHB may deter access to service. Because many on-reserve First Nations people live with elevated rates of poverty, fear of incurring costs may prohibit even preliminary inquiries about eye-care services. Within the payment structure for eye care in British Columbia, there are three potential payers for Status Indians. The three sources of payment are the provincial medical services plan, NIHB, and the patient. Occasionally, individual reserves may decide to cover or help cover the patient's portion of the exam fee. Awareness about available services was also identified as a barrier for some people living on the reserve. Participants expressed concern about whether individuals were fully aware of the importance of eye care. As health care workers,

the participants were acutely aware of the importance of eye care for vulnerable populations, such as children, diabetics, and seniors; however, they were unsure if this awareness extended to the general community. Although there was a generalized awareness about eye care health services, a significant amount of confusion and concern among participants remained.

ATTITUDES

Participants spoke broadly about feelings of apprehension towards eye care, which may result in people being less likely to seek out or access services; conversely, if there is a comfortable and positive attitude about eye care, people may be more likely to access it.[14] The three main attitudes expressed by participants were inconvenience of seeking care; a sense of eye care as wellness; and feelings of mistreatment by the government, who they linked to eye care. Many participants said that accessing off-reserve services is a major inconvenience, particularly for people living in the Lake Babine communities. One participant thought community members were pursuing alternatives to accessing care, including buying and using cheap department store reading glasses. This participant believed the convenience and wide availability of department store reading glasses made them an attractive alternative for community members, despite these glasses perhaps having deleterious impacts on overall vision health. The participant stated, "I think that it's more convenient for them to just go downtown and just buy a set of reading glasses for twenty bucks" (Participant 2: personal communication; interview). Participants also linked eye health to overall health status, acknowledging that it does impact quality of life. One participant discussed how altered vision, due to dilated fundus examination, and the inability to drive immediately after an appointment, affects people's ability to access resources outside rural communities and, consequently, their quality of life. Many Indigenous people in Canada have remarkable strengths and resiliency. Equally true, as Elder Willie Ermine once noted, is the tendency of settler researchers to "pathologize" Indigenous peoples – arguably an extension of ongoing colonial violence.[15] Nevertheless, especially in isolated Northern First Nations communities, there are often elevated rates of poverty; having a car, or the money to buy gas for it, must be accounted for when considering issues around eye care and health.

Feelings of mistreatment toward the government were also expressed in the interviews. Several participants voiced their concern about budget cuts, changes to NIHB, and the quality of government-funded eyewear available to First Nations people. Participants associated lower-quality government-funded glasses with outcomes like social exclusion, stigmatization, and racism. In other words, participants felt that governments might, within a context of vision health and care, be perpetuating ongoing social and historical colonial narratives in which First Nations are "second-class" citizens. One participant discussed an experience of being made fun of because of their "funny glasses" while growing up. This was a hurtful experience that might have impacted not only the participants decision to access eye care, but also the kind of advice the participant offered to other community members. Based on our personal connections with optometrists in the north, we validated the participants' concerns about the quality of government-funded eyewear. One optometrist noted that, "The funding model does not allow higher-quality frames that would be more durable to be purchased. They do fund lenses reasonably, but those patients requiring a progressive lens must pay the out-of-pocket difference from a bifocal. With the common use of computers, a bifocal lens is inappropriate but likely the only option available if the patient was poor. Most first nations are getting a budget frame and basic lenses compared to other patients"(personal communication with a Northern BC optometrist, email; March 17, 2015).

The aforementioned attitudes can directly shape access of eye-care services by either encouraging care (link between eye care and wellness) or discouraging care (feelings of marginalization by the government). If First Nations vision health is to be improved, it is necessary to consider how experiences and understandings about government or professional attitudes towards First Nations people influence and shape their access to and choices about care.

SOCIAL

Identified social factors included lack of translators for Elders, feelings of discomfort in clinical settings, and conflicting community events–many of which were culturally imperative. The availability of translators for Elders is incredibly important for improved communication between

the patient and their doctor. The challenge of finding translators to attend appointments was one of the main reasons cited for preferring on-reserve care: within their home communities, Elders and others for whom English is not their first language were more likely to find translators. Away from home, such informal translation was more challenging. The interviews also made apparent that community members sometimes feel misunderstood by health care practitioners. One participant recommended practitioners travel to reserves to see how the communities live. This might result in greater cross-cultural understanding, something participants clearly voiced as a potentially positive factor in increasing First Nation buy-in to vision care. In addition, increasing levels of trust between practitioners and patients could prove to be valuable in encouraging community members to access care and developing continuity of care.

Another culturally specific aspect that needs to be better understood by vision care practitioners is the relatively transient nature of members of First Nations reserve communities: many people travel to attend important community events, such as funerals, marriages, potlatches, naming ceremonies, and educational milestones. Many members also move back and forth between communities or back and forth between their reserve communities and urban centres.[16] Thus intermittent or travelling vision health care clinics may not reach intended populations simply because of scheduling.

ECONOMIC

The most frequently discussed barrier explored by participants concerned the expenses associated with seeking care. Indeed, all participants identified expense as a major barrier. Participants discussed how costs associated with exams, travel, and eyeglasses affected their community members' ability to access care. The majority of individuals in many First Nations communities are from low-income backgrounds, so expenses such as eye exams are a lower priority than, for instance, food and shelter expenses. Some participants stated that community members are simply waiting until eye-care services are available on the reserve in order to save on expenses.

When eye care has been offered on the reserve, the nation's health office has funded the portion of the eye exam fee that would not ordinarily be covered through government funding. Thus, one of the reasons residents prefer to wait for on-reserve eye care is the decrease in personal out-of-pocket expenses. Financially, the expense of subsidizing eye exams affects the health office by consuming resources that might have otherwise been directed towards other health initiatives within the community. The low-income nature of these communities greatly affects the individual's ability to access care as well as the expense incurred by the health office in providing eye care for their communities.

SERVICE RELATED

Service-related barriers included a lack of availability of on-reserve care. The lack of services and the difficulty of getting practitioners to travel to the reserves have created a deficiency of culturally safe and easily accessible on-reserve services. These challenges are exacerbated in remote communities, highlighting the multiple challenges faced especially by residents of small and isolated First Nations. Insurance eligibility coupled with the low frequency of on-reserve care is an additional challenge. If the period for renewed eligibility has not elapsed, the individual may need to wait a long time before services are offered on the reserve again. For instance, if a patient received an eye exam on July 20, 2013, they would not be eligible for another exam until July 20, 2015. So, if eye-care services were offered on-reserve July 15, 2015, they would not be eligible to receive a funded eye exam and may have to wait another year or more until on-reserve care was offered again. This scenario is particularly concerning due to the lower health status of First Nations communities and the role eye exams play in early identification of various systemic diseases, such as diabetes.

Off-reserve services and secondary levels of care require travel, which is a major deterrent to seeking care. In particular, the large geographical distance between the reserve communities and secondary eye-care services such as ophthalmologists is a substantial barrier due to the increased distance of travel.

COMMUNITY NEEDS AND PREFERENCES

The interviews yielded information about community needs and preferences. All of the participants expressed a strong preference for on-reserve care for the community. On-reserve care reduces cost to the individual, travel expenses, and language-related barriers. Participants felt on-reserve care was more customized to the unique needs of their First Nations community. There was such a strong preference for on-reserve care that we questioned whether community members would access off-reserve care, even if barriers were addressed. On-reserve vision care might ultimately be the best solution to poor eye health in First Nations communities. Participants also felt the frequency of service was too low and that there was a lack of follow-up. One participant discussed an experience where some individuals from the community had asked the office workers questions about the on-reserve care they had recently received. The office worker did not know where to direct the questions because the optometrist had already left. This illustrates the need for greater continuity of care and the development of lasting relationships between practitioners and the community. It also demonstrates the need for long-term relationships and a commitment to continuing clinical knowledge among First Nations communities.

Participants expressed a desire for more community education about the importance of eye care. Education through workshops, accessibly worded and culturally specific pamphlets, in addition to more education during appointments, were all suggested. Participants thought that these initiatives would be well received by community members.

The qualitative community-based interviews produced a wealth of information surrounding community access to eye care. The value of this study is in the specific comments nuanced in the context of the participants' conversations with the researcher. Many of the issues are intimately linked and can only be briefly examined here.

DISCUSSION

Key informant interviews as an instrument for qualitative inquiry empowers participants in a way that values their views and perspectives.[17] By listening to the participants' viewpoints it is possible to both deepen our understanding about the functioning of the community more broadly and about the specific challenges they face. This in turn yields valuable information about ways to cultivate lasting and meaningful relationships between practitioners and communities. Upon analysis of both the interviews and existing literature, a number of important points surfaced.

The findings of this research affirm the importance of a social determinants framework when exploring eye-care accessibility, particularly in First Nations contexts. Reading and Wein suggest there is a relationship between health inequities and "the degree to which inequalities in the social determinants of health act as barriers to addressing health disparities."[10] Many of the barriers discussed by participants can be traced to social roots. Consequently, ocular health should be considered in relation to social determinants of health. Furthermore, as some literature emphasizes how different communities have been differently impacted by history and colonialism, it is important to understand the unique and particular ways that social determinants, including colonialism, manifest in relation to eye and vision health.[18] The importance of community differences was reflected upon by participants who emphasized the uniqueness of each of the three communities, underscoring the importance of health research using a historical lens to develop a greater and more specific understanding about First Nations communities.[19,20] Due to the uniqueness of the communities, each one should be considered individually when addressing the challenges they face in accessing care.

A particularly interesting insight offered by participants concerned levels of community awareness surrounding on-reserve eye care services. Participants believed good community awareness existed about the on-reserve eye care services. However, responses about the frequency and location of these services varied. In a study by Palagyi and colleagues, awareness about services was found to be the greatest barrier to accessing eye care for a group of Indigenous people in Timor Leste.[14] Although the circumstances of the Indigenous people in Timor Leste may be radically different from peoples in Canada, this finding demonstrates the importance of service awareness. It is important not to overlook awareness as a barrier; further inquiry may be valuable.

The barriers cited most often in the interviews were economic and travel barriers. These seemed to be the major reasons for preference of on-reserve care. Participants felt that having on-reserve care helped eliminate many of the barriers to accessing care, including cost of exam, understanding of insurance, travel, and language barriers. Having exams on the reserve also helps the community's health office to ensure children in the community are in fact receiving eye care. However, drawbacks to on-reserve care do exist, including low frequency of service availability (e.g. clinics travel in intermittently) and the challenge of finding practitioners to travel to the rural communities.

Some participants expressed concerns and awareness about the relationship between diabetes and eye care. In the literature, significant concern is expressed about the elevated rates of diabetes in many First Nations communities and the potential for eye-related complications.[1,2] Some of the participants' statements suggest that greater education and diabetes-specific eye care initiatives might be valuable to these communities.

Another important aspect of providing care to First Nations communities is developing ongoing patient–doctor relationships. A significant amount of literature discusses the importance and continuity of such relationships, particularly within the context of Indigenous communities.[21–23] Based on participants' statements, their communities could greatly benefit from more follow-up and continuity of care. It takes time to earn a community's trust and truly understand their social, cultural, and historical circumstances. Understanding the community is important for providing culturally sensitive care and developing cross-cultural understanding. One limit of this study is that the results are specific to the communities investigated and should not be generalized to other settings and communities. Nevertheless, it might be surmised that creating semi-self-sustaining eye-care services would benefit these and other First Nations communities.

CONCLUSION

The topics of access to eye care and social determinants are inseparable when considering a community's access to care. Research should go beyond acknowledging the existence of these determinants. An ideal approach should attempt to develop the understanding of these factors within the context of the research and to address the underlying issues. Community-based qualitative research as a method for inquiry provides a wealth of information that has enormous value both for the community and for practitioners. Identifying a community's understanding about issues affords professionals the foundation upon which to develop meaningful understandings about the communities they work in. Furthermore, discussing and acknowledging issues surrounding eye care promotes greater awareness and fosters discussion within the community. Many of the social, economic, and service-related barriers are easily addressed through a well-designed eye-care program. The barriers related to awareness and attitudes are more difficult to address and their effects are likely underestimated. Future eye-care initiatives should take a community-specific approach, be predictable and consistent, and incorporate features designed to address community awareness and attitudes, particularly, in addition to the other barriers. From here, it may be possible to see even more clearly a future of optimal optical health.

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APPENDIX A

1. Participant profile:
a. Age
b. Gender
c. Are you a member of the Lake Babine Nation?
d. How long have you been involved in Health Care with the Lake Babine Nation?
e. What is your role within Lake Babine Health?

2. In your view, what challenges do your communities face in accessing eye care?

3. When Lake Babine Health introduces a new health program, what are the biggest factors that determine its success?

4. What type of appointments are best for your communities? On-reserve versus off-reserve eye care? Scheduled appointments versus drop-in format?

5. Has awareness or lack thereof about eye care services impacted your community in accessing services? For instance do your community members know of the services available to them?

6. What are some prevalent attitudes in regards to eye care in your community? For instance, do people feel that there is no need, feel they can manage without or accept eye problems as a normal part of aging?

7. What eye care services are available to your communities?

8. Are the eye care services available to your community easily accessible? What would make them more easily accessible?

9. Do you think the eye care services available to your community are adequate? How might they be improved?

10. What do you think could/should be done to get more people from your community to use the services available?

11. From a health organization perspective what are the biggest challenges that Lake Babine Health faces in securing eye care for its communities?

12. Reflecting on the recent on-reserve eye care services that were provided, what went well and what do you think could have been done differently?

13. Do you have anything else you'd like to tell me about on the topic of accessing eye-care?

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Negotiate Your Commercial Lease or Renewal for Optometry Tenants

Jeff Grandfield and Dale Willerton

Dale Willerton is the founder of The Lease Coach and Jeff Grandfield recently joined him as partner. Dale and Jeff are commercial lease consultants who work exclusively for tenants, and are also professional speakers and co-authors of Negotiating Commercial Leases and Renewals For Dummies. *Got a leasing question? Need help with your new lease or renewal? Call 1-800-738-9202, email DaleWillerton@TheLeaseCoach.com, or visit www.TheLeaseCoach.com. For a copy of our free CD, Leasing Dos & Don'ts for Commercial Tenants, please email your request to DaleWillerton@TheLeaseCoach.com.*

For many tenants, negotiating a good lease or lease renewal against an experienced agent or landlord can be a challenge. While an optometrist focuses on proper patient care, savvy real estate agents and brokers are specialized sales people. Their job is to sell tenants on leasing their location at the highest possible rental rate.

Optometry tenants may go through the leasing process two or three times in their entire lifetime – yet they have to negotiate against seasoned professionals who settle leases every day for a living. An appropriate lease term is vital for a tenant, because the amount of rent he or she pays will directly impact the clinic's financial bottom line.

Whether you are leasing a new location for the first time for your optometry clinic or you're negotiating a lease renewal, the following are some tips for tenants:

Negotiate to Win: All too frequently, optometry tenants enter into lease negotiations unprepared and don`t even try to win the negotiation. If you are not even negotiating to win, you won`t. With big commissions at stake, you can be sure the landlord`s agent, on the other hand, is negotiating fiercely to win. Optometry tenants should remember it is okay to negotiate assertively.

Allow Sufficient Time: For a new location lease agreement, get started a minimum of nine months in advance to avoid unexpected situations and delays. Lease renewal negotiations should begin at least 15 months before the lease term expires. This will give you sufficient time to look at other sites, complete the necessary paperwork, and do your homework. If you can't get a decent renewal rate, would you rather move with three weeks or six months left on your lease term? Both for new leases and renewals, time will be your ally, or your enemy, depending on how you use it.

Be Prepared to Walk Away: Set aside your emotions and make objective decisions. Whoever most needs to make a lease deal will give up the most concessions. A good clinic in a poor location will become a poor business.

Ask the Right Questions: Gathering information about what other tenants are paying for rent or what incentives they received will position you to get a better deal. Consider that your landlord and his agent know what every other tenant in the property is paying, so you must do your homework, too.

Brokers … Friend or Foe? Real estate agents and brokers typically work for the landlord who is paying their commission. It is not normally the agent`s role to get the optometry tenant the best deal; it is their job to get the landlord the highest rent, the biggest deposit, etcetera. Typically, the higher the rent you pay, the more commission the agent earns. If you are researching multiple properties, try to deal directly with the listing agent for each property, rather than letting one agent show you around or show you another agent`s listing. Your tenancy is more desirable to the listing agent if he can avoid commission splitting with other agents.

Who Makes the First Offer? Whether you are looking at a new lease or a renewal, it is best if the landlord makes the first proposal. Don't be surprised if your verbal request (especially for a renewal proposal) falls on deaf ears. Write a brief letter (or email) to the leasing representative or property manager requesting a written proposal within ten days. Print a second copy of this letter or email for your records and to create a paper trail. If you make the first renewal offer, this implies you will stay leasing your current location, which undermines your negotiating strength.

Never Accept the First Offer: Even if the first offer seems reasonable, or you have no idea what to negotiate for, never accept the leasing agent`s first offer. In the real estate industry, most things are negotiable and the landlord fully expects you to counter-offer.

Go Slow for a Better Deal: Optometry tenants who rush a lease deal will often leave valuable incentives or inducements on the table. If you have the time available, we recommend that you take it. Often we get tenants more free rent, more tenant allowance, or even a lower rental rate just by refusing to sign too quickly on the dotted line. If the landlord or agent is anxious to close the deal, you can use stalling tactics to better your position (for example, saying that you're waiting on financing approval from the bank or you need to discuss matters with your business partner, who is currently out of town). Optometry tenants who have regrets will usually tell you that the whole leasing process happened so fast that they hardly realized what they agreed to.

Ask for More Than You Want: If you want three months free rent, then ask for five. No one ever gets more than they ask for. Be prepared for the landlord to counter offer and negotiate with you as well. Don`t be afraid of hearing "no" from the landlord, as counter offers are all part of the game.

Negotiate the Deposit: Large deposits are not legally required in a real estate lease agreement for a tenant. Deposits are negotiable and, more so than anything else, often serve to compensate the landlord for the real estate commissions he will be paying out to the agents. If you are negotiating a lease renewal and your landlord is already holding a deposit of yours, negotiate to get that deposit back. The Lease Coach is frequently successful in negotiating for a reduced deposit (or none at all) for a new tenant and/or a refund of a paid deposit for existing tenants approaching their lease renewal.

Measure Your Space: Most optometry tenants who lease space pay rent per square foot. Frequently, the premises or area has not been measured properly and the tenant is paying for *phantom space* (or space that is reported but doesn't exist). Measurement discrepancies (more often made by accident or oversight rather than fraud) are common, so be sure to have your clinic's space verified. It not only affects your base/minimum rent but also your common area maintenance (CAM) costs.

Lease Renewal Allowances: Optometry tenants often don't think they can negotiate for tenant allowance on their renewal term. Not true! Approximately 75% of our tenant clients get a tenant allowance (including free rent, landlord's work to the property, and so on). Remember, if the landlord is giving allowances to new tenants as enticement for moving in, then why can't you get an allowance, too? Even if your clinic space only needs cosmetic upgrades (e.g. new carpeting for the waiting room or a fresh coat of paint for your examination room), negotiate it as part of the renewal deal. After all, your tenancy is proven, plus there is less risk for the landlord putting cash into your renewal than taking a chance on a new tenant.

Anticipate Your Lease Assignment: Landlords anticipate you will eventually sell your clinic and that you will want to assign your lease agreement; you should do this, too! Some lease agreements state that the landlord can unilaterally terminate your lease rather than grant an assignment. On the other hand, the landlord can also automatically raise the rent for the new tenant (your clinic's buyer). Check this clause carefully before you agree to it — and then negotiate for changes.

Renewing With No Deposit: If your lease agreement requires you to make a deposit for the initial lease term, it is unacceptable for that deposit to continue indefinitely. Are you a security risk? Have your rental payments been made on time? If so, resist further security deposits and make sure this amendment is stated in the renewal document. Otherwise, your deposit, which was to be applied to the last month, needs to be replaced for the renewal term.

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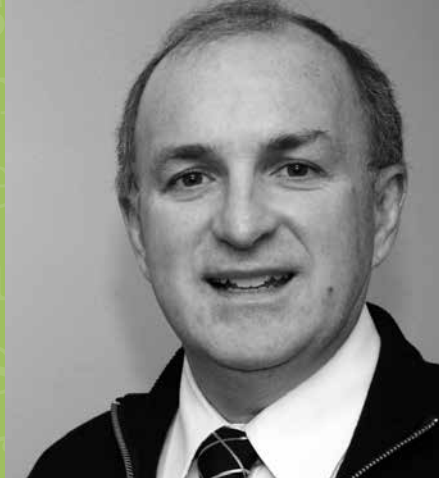

DR. DAVID MCKENNA

COETF is raising funds in memory of Dr. David McKenna

In March 2014, we were deeply saddened by the passing of our colleague Dr. David McKenna.

David will be remembered for many things but mostly for his personality and his ability to make people laugh. I am sure each of you has fond memories of David.

David loved optometry and he worked hard at the provincial and national level to bring positive change to the profession. David was Prince Edward's representative to the Canadian Examiners of Optometry and served to the Canadian Examiners of Optometry and served on the CEO Executive Committee. He was a Trustee of the Canadian Optometric Trust Fund from1988-1991, Chair of the CAO Congress in 1993 and Co-Chair of the 2009 CAO Congress in P.E.I. Provincially he was part of the executive committee for his entire career and he worked on the steering committee for provincial TPA's. He was host and a mentor to many optometry students from the University of Waterloo, and generously shared his knowledge and his home to some of the students. David believed strongly in the future and growth of optometry as a profession.

He devoted much time and effort to COETF. It was David's love for optometry that brought together a number of his friends and colleagues to set up a memorial fund in his name. We are an ambitious group with a goal to raise $75,000.

David was a leader in his profession and contributed to the betterment of the profession for his entire career. By making a donation in his memory you will ensure that the spirit of David's generosity continues. COETF is optometry's only charitable organization and the funds raised are used to support optometry research and to provide grants to assist optometry students. We are asking for your support and a donation of $1000 in David's name. If this suggested amount is not possible, please give, as you are able. You can donate online by visiting: **www.coetf.ca**

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Negotiate Renewal Option(s): Remember to negotiate your Renewal Option(s) in advance and specify that they be assignable. Stating that the renewal option be for up to five years (for example) will give you more flexibility if you want to renew for only two more years instead. Renewal option wording can be tricky ... so read this carefully.

Don't Forget the Parking: When negotiating for parking, first establish the availability and preferred locations. It's harder to negotiate for parking spots after they've all been taken, versus when there is a surplus of parking. If you can't get a landlord to come down on a rental rate, at least ask for five months of free parking as a lease incentive. Trust us, parking is worth negotiating for – so that your patients, your staff, and you all have a place to park.

Negotiate, Negotiate: The leasing process is just that— a process, not an event. The more time you have to put the deal together and make counter offers, the better the chance you have of getting what you really want. Too often, tenants mistakenly try to hammer out the deal in a two- or three-hour marathon session. It is more productive to negotiate in stages over time.

Educate Yourself and Get Help: Unless you have money to throw away, it pays to educate yourself. Taking the time to read about the subject or listen in on a leasing webinar will make a difference. And don`t forget to have your lease documents professionally reviewed before you sign them. With hundreds of thousands of dollars in rent at stake, personal guarantees, and other risks, you can`t afford to gamble. In leasing, optometry tenants don`t get what they deserve; they get what they negotiate.

Grow Your Practice With Inbound Marketing

Pauline Blachford

Pauline Blachford consults optometrists on how to reduce unbooked appointments, increase eyewear sales, and improve employee productivity. She has abundant experience in the eye health industry, including 17 years at White Rock Optometry in B.C. Pauline frequently presents at optometry conferences and is a regular columnist for the CJO. For more information, visit paulineblachford.com.

I love working with optometrists who are looking to grow their practice, particularly those who are just starting out. I see their limitless potential, and they act like sponges, soaking up insights, new techniques, and my coaching.

When it comes to business development, these doctors are always excited to learn that their marketing strategy does not have to centre on costly and uninspiring newspaper ads. Those who work for more established optometrists also feel empowered when I remind them that they (not their bosses) are responsible for building their database of clients and filling their own schedules. For optometrists at this stage of their career, and indeed for all optometrists, the concept of "inbound marketing" can be pivotal.

DEFINING INBOUND MARKETING

Inbound marketing is about creating and sharing content that is valuable to your customers. This content attracts prospects to your business, where you can convert them into clients and delight them with your exceptional service.[1] Mediums for inbound marketing include written articles or blogs, social media interactions, and oral presentations. Inbound marketing contrasts with outbound marketing, which aims to interrupt potential clients. Think TV commercials, newspaper ads, mass emails, and those weird Internet ads with flashing images of Dr. Oz. Outbound marketing tries to steal people's attention away from what they actually want to be doing, whether that's watching TV, catching up on the news, or checking emails.

The fundamental difference is that outbound marketing provides no value to the reader, viewer, or Internet browser—aside from informing them of the product or service being advertised. Inbound marketing has been on the rise since 2006, with some proclaiming the traditional outbound marketing playbook is broken.[2] Figure 1 demonstrates that the vast majority of companies improve their marketing return on investment (ROI) after implementing inbound marketing.[3]

INBOUND MARKETING FOR OPTOMETRISTS

As optometrists, you are ideally suited to employ inbound marketing because you have rare knowledge that is valuable to your ideal clients. You spent eight years after high school studying to become a doctor of optometry. And you were not learning about nuclear physics or Roman history; you were studying something that affects all people, every moment of every day (I'm sure that nuclear physicists and Roman historians would say their disciplines also influence peoples' daily lives, but, come on!).

Inbound marketing is especially suited to doctors whose practices are still budding, since it requires time and effort to produce and distribute valuable content and does not require a substantial monetary investment.

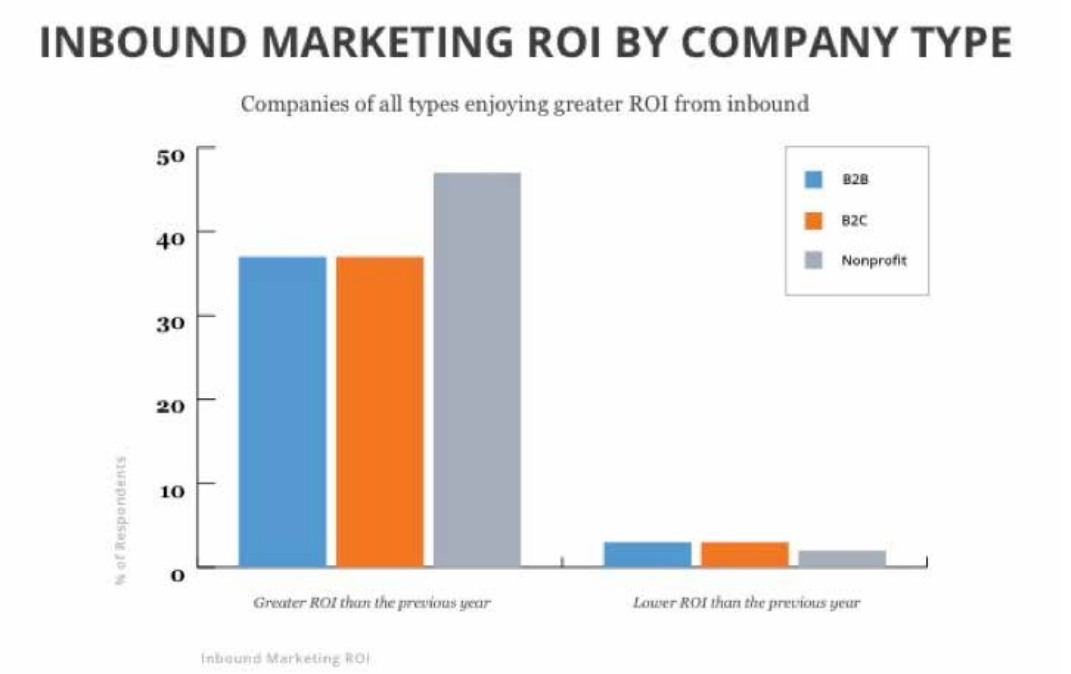

Figure 1. *B2B = business-to-business and represents companies that sell their products and services to other businesses. B2C = business to consumers and represents companies that sell their products and services directly to consumers, such as optometry practices.*

INBOUND MARKETING IN ACTION

To illustrate how the concept of inbound marketing can be applied, I obtained permission from a few of my excelling young clients to share their stories and successes. Dr. Heather Cowie owns her optometry practice with a fellow optometrist, Dr. Brent Hopfauf, in Airdrie, Alberta. Dr. Eva Kalicinsky owns and operates her own optometry practice in Cloverdale, BC. And Dr. Marina Ceaus practices optometry at a clinic owned by a well-established optometrist.

Dr. Heather has been doubling down on her inbound marketing since we began working together about seven months ago. After our first meeting, she contacted her local newspaper and now writes a monthly column called "Ask the Experts." She learned one of her patients was a teacher who asked her principal if Dr. Heather would speak to the parent committee on the importance of regular eye health exams for children. She also joined a Facebook group for mothers in her community. She scrolls the page and responds to questions that mothers post about their children's eye health and vision.

A creative inbound marketing medium that I heard of from Dr. Eva is called "Walk with the Doc." Local doctors in the area take turns going on walks with senior citizens, at which time the seniors can ask the doctors about the health issues they're facing. I love that even the format of the presentation (walking) promotes health and that the walk provides an open and accessible forum to connect with a population that needs special care.

By providing their communities with their valuable expertise, Drs. Heather and Eva are demonstrating they are caring and trustworthy. And trust leads to loyal clients.

Dr. Marina recently made the shift from outbound to inbound marketing. She used to pay for an ad in a local newspaper, but wasn't satisfied with her ROI. She now puts her time and energy into keeping the practice's blog and social media current. This is wise, because studies have shown that websites with blogs receive 97% more indexed links, which causes them to rise to the top of the hits on Google.[4]

In the end, no two inbound marketing strategies are alike. The best inbound marketing strategies are highly individualized, leveraging the optometrist's unique personal characteristics and aptitudes. They also consider the demographics and needs of the community served by a practice. For help in developing an inbound marketing strategy that will help you grow your practice, contact me.

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