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REVUE CANADIENNE D'OPTOMÉTRIE

VOL 68 NO 1
JANUARY / JANVIER 2006

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Cover: Fittingly, the start of the New Year signals new beginnings and in this spirit, this issue is dedicated to children. The CJO is pleased to publish the guest article submitted by the American Optometric Association that outlines its InfantSEE® program. Developments of CAO's Children's Vision Initiative can be found on page 41, as well as other related articles that honour children's vision.

Couverture: Convenablement, le début de la nouvelle année signale de nouveaux commencements et dans cet esprit, ce numéro de la RCO est consacré à la vision des enfants. La RCO est heureuse de publier l'article invité soumis par l'Association américaine des optométristes qui décrit son programme InfantSEE®! De plus, vous pourrez trouver les développements de l'Initiative de la vision des enfants à la page 45, ainsi que d'autres articles connexes sur la vision des enfants.

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American Optometric Association InfantSEE™ Program:

Programme InfantSEE™ de l'American Optometric Association

Summary of activity in program's first six months

In the summer of 2002, Former U.S. President Jimmy Carter gave the Keynote Address at the Annual AOA Congress. He described the vision problems two of his grandchildren had been diagnosed with and the lasting impact these problems would have on their lives because the conditions were diagnosed so late. He challenged AOA members to develop a program that would provide no-cost eye and vision care to infants, regardless of ability to pay. He believed no child should suffer needlessly when early detection and treatment are effective in addressing most vision problems. President Carter offered his assistance in promoting such a program; three years later, the InfantSEE™ program was "born".

"... I took my 7 month old son Braeden to see Dr. Allan Hudson in Redmond, Oregon. I'm grateful for the information I received. I am very happy that we were able to learn about this program early enough to get an assessment before Braeden's first birthday. Luckily he does not have any eye problems at this time and Dr. Hudson says that Braeden's eyes are healthy and his vision is great. The assessment was given at no charge! What a shock, a doctor visit that didn't cost me anything - I was thrilled! I am going to share this wonderful organization's web site with as many moms as I can. Thank you to the InfantSEE™ program and the participating doctors!"

Parents and early childhood educators have proven to be powerful allies to the InfantSEE™ program in just the first six months of operation. Program administrators are encouraged by letters such as the one printed above, and aspire to help parents and childcare agencies continue to spread the word to more parents about infants' vision and no-cost InfantSEE™ assessments.

Word of mouth by parents nationwide was initiated on June 8, 2005, when InfantSEE™'s "birth" was announced. The launch was marked by multiple events, including: the NBC Today Show appearance of former President Jimmy Carter and Dr. Scott Jens, chair of the InfantSEE™ Committee, an article in USA Today, a press conference for members of national parenting publications, a satellite media tour of morning television news broadcasts in 19 major U.S. markets, and the debut of the InfantSEE™ Web site (*www.infantsee.org*).

Two weeks later at Optometry's Meeting™ in Dallas, Texas, AOA members, ophthalmic industry leaders and guests celebrated the success of the launch, which illuminated the culmination of thousands of hours enthusiastically contributed by many AOA volunteers and leadership.

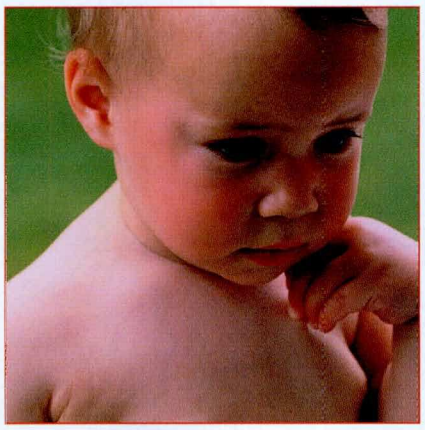
InfantSEE™ has remained in the media since the launch with articles in Baby Talk

InfantSEE™

American Optometric Association

QUICK facts:
At the urging of Former President Carter in 2002, AOA accepted the challenge to develop a program that started professional eye care at a young age, with no cost to patients, health care insurance, or the government. Former President and Mrs. Carter have agreed to serve as honorary spokespersons providing support such as public service announcements promoting the InfantSEE™ message. Nearly 7,000 AOA member optometrists are participants in the program

GUEST ARTICLE
ARTICLE INVITÉ



and American Baby magazines (each with readerships of two million). An Associated Press wire story was released in August and the President Carter television public service announcements have been aired over 800 times by 68 U.S. stations to date.

InfantSEE™ doctors are provided with brochures (in English and Spanish), patient history and two-part clinical assessment forms, and sample media kits to implement the program in their offices and promote InfantSEE™ in their communities. The McNeil division of Johnson & Johnson graciously contributed 42,000 packages of Tylenol® Infants' Drops to InfantSEE™ providers.

Other materials planned for development this year include: a "report card" for parents, a reporting form that can be used to inform the baby's pediatrician/primary care doctor of the assessment results, and an after-assessment pamphlet with information about eye and vision development during the toddler years. Wristbands are now available for purchase on the InfantSEE™ Web site to further promote the program.

To date, 4,000 clinical assessment forms have been received, though it is believed that many more infants have received eye and vision assessments. We continue to communicate to InfantSEE™ providers the importance of returning the clinical assessment forms for data collection purposes.

Data from the returned clinical assessment forms are being currently analyzed, and a preliminary report is expected to be released in June 2006.

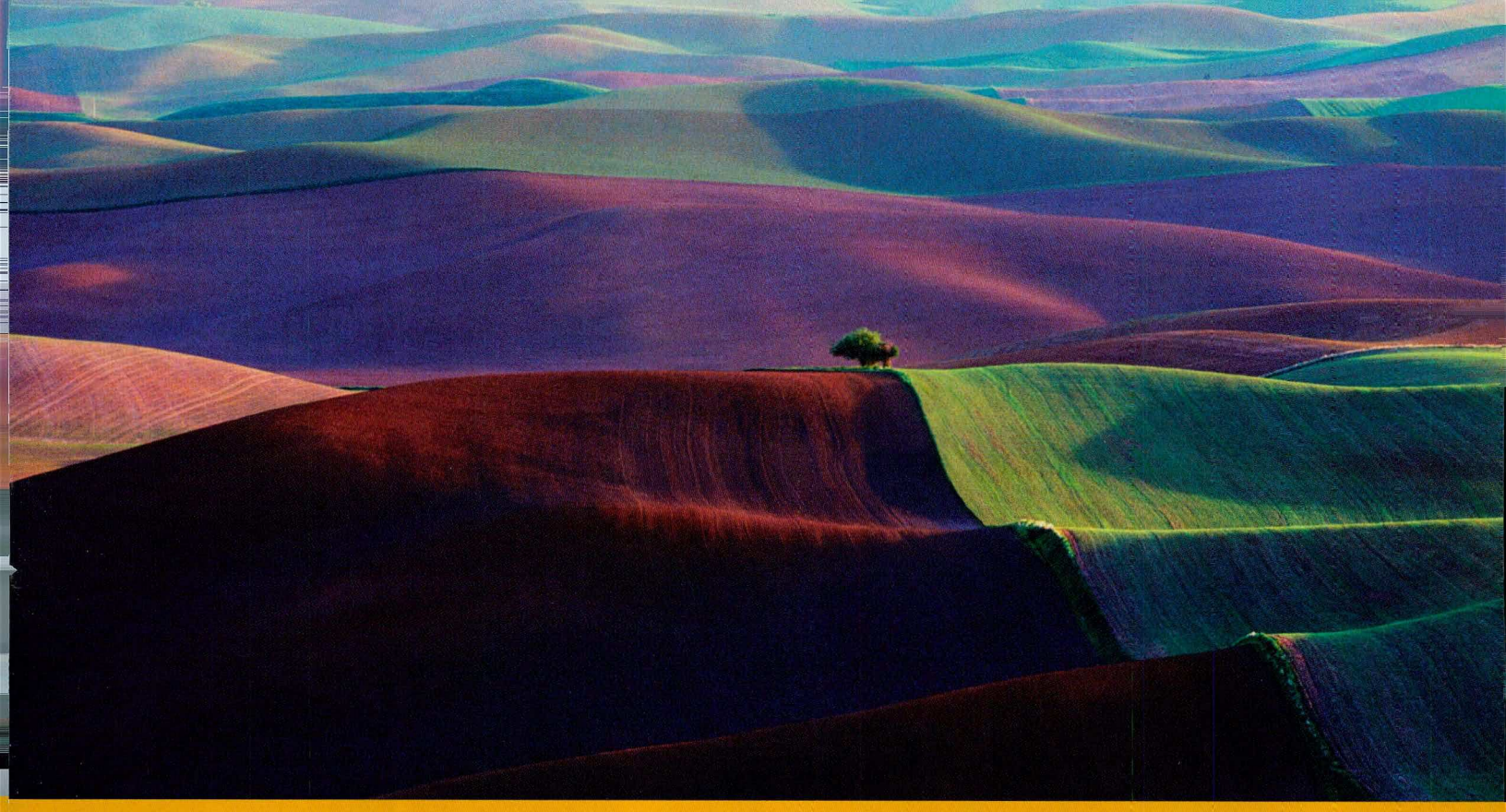
Currently, 34% of the AOA membership is enrolled as InfantSEE™ providers. The goal in the next year is to reach 50%. A strategic planning meeting is scheduled to discuss and formulate plans to maintain continued growth for the program's future. Increasing the public's awareness of InfantSEE™ and the no-cost eye and vision care it provides remains a top priority.

Résumé des activités des six premiers mois du programme

À l'été 2002, l'ancien président des États-Unis, Jimmy Carter, a prononcé le discours liminaire au Congrès annuel de l'AOA. Il a décrit les problèmes de la vue diagnostiqués chez deux de ses petits-enfants et les conséquences permanentes que ces problèmes auraient dans leur vie parce qu'ils avaient été diagnostiqués trop tard. Il a mis au défi les membres de l'AOA d'élaborer un programme de soins oculo-visuels gratuits pour les enfants, sans tenir compte de la capacité de payer. Selon lui, aucun enfant ne devrait souffrir inutilement lorsque la détection et le traitement précoces sont efficaces pour résoudre la plupart des problèmes de la vue. Le président Carter a offert de participer à la promotion d'un tel programme; trois ans plus tard, le programme InfantSEE™ était « né ».

« … J'ai amené mon fils de sept mois, Braeden, chez le Dr Allan Hudson à Redmond (Oregon). Je suis reconnaissante de l'information reçue. Je suis heureuse d'avoir pris connaissance de ce programme suffisamment tôt pour demander une évaluation avant le premier anniversaire de Braeden. Heureusement, il n'a aucun problème en ce moment et le Dr Hudson dit que les yeux de Braeden sont en santé et qu'il a une très bonne vue. Cette évaluation était gratuite! Quelle surprise: une visite chez un professionnel de la santé qui ne coûte rien – j'étais emballée! Je vais communiquer l'adresse Internet de cette merveilleuse organisation au plus grand nombre de mamans possible. Merci au programme InfantSEE™ et aux spécialistes participants! »

Les parents et les éducateurs dans le réseau de la petite enfance se sont révélés être de puissants alliés du programme InfantSEE™ pendant ses six premiers mois de fonctionnement. Les administrateurs du programme sont encouragés par les lettres qu'ils reçoivent (comme celle ci-avant) et souhaitent aider les parents et les organismes d'aide à l'enfance à répandre la bonne nouvelle à plus de parents au sujet de la vision des enfants et des évaluations gratuites de InfantSEE™.



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VISUDYNE* is a drug to be used in Visudyne* Therapy. Visudyne* Therapy is a two-stage process requiring administration of both verteporfin for injection and non-thermal red light.

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If you suspect wet AMD, refer your patient immediately.
For a list of Visudyne* clinics near you or for more information, call 1-866-393-6337

† Treatment of AMD with PDT. n=609. Combined results from two multicentre, randomized, parallel group, Phase III studies of subfoveal choroidal neovascularization secondary to age-related macular degeneration using photodynamic therapy with verteporfin compared to placebo. Avg. number of treatments: Year 1=3.4, Year 2=2.1 Safety and efficacy beyond 2 years have not been established.

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GUEST ARTICLE
ARTICLE INVITÉ

Ce bouche à oreille des parents au pays a pris forme le 8 juin 2005 lors de l'annonce de la « naissance » de InfantSEE™. De multiples activités ont souligné le lancement, notamment : la présence de l'ancien président Jimmy Carter et du Dr Scott Jens, président du comité InfantSEE™ à l'émission *Today Show* du réseau NBC, un article dans le *USA Today*, une conférence de presse pour les membres des publications nationales de parentage, une tournée médiatique par satellite des bulletins de nouvelles télévisés matinaux dans 19 grands marchés américains et le lancement du site Web de InfantSEE™, *infantsee.org*).

Deux semaines plus tard, à l'Optometry's Meeting™ à Dallas (Texas), des mem-bres de l'AOA, des dirigeants de l'industrie ophtalmique et des invités ont célébré la réussite du lancement, point culminant de milliers d'heures de travail enthousiastes de la part de nombreux dirigeants et bénévoles de l'AOA.

Depuis son lancement, Infant-SEE™ est demeuré présent dans les médias grâce à des articles dans des revues comme *Baby Talk et American Baby* (avec deux millions de lecteurs chacune). En août, l'Associated Press publiait un article, et les messages du président Carter à la télévision publique ont à ce jour été diffusés plus de 800 fois par 68 stations américaines.

Les spécialistes qui participent au programme InfantSEE™ reçoivent des brochures (en anglais et en espagnol), des formulaires d'antécédents médicaux et d'évaluation clinique à deux volets, ainsi que des trousses médiatiques modèles pour mettre en place le programme dans leur bureau et promouvoir InfantSEE™ dans leur collectivité. La division McNeil de Johnson & Johnson a gracieusement offert 42 000 contenants de gouttes pour nourrissons Tylenol® aux fournisseurs du InfantSEE™.

On prévoit élaborer d'autres documents cette année, dont un « bulletin » pour les parents, un formulaire servant à informer le pédiatre ou le médecin de soins primaires des résultats de l'évaluation du bébé, et un dépliant post-évaluation renseignant sur le développement oculo-visuel durant les premières années de vie du bébé. Le site Web InfantSEE™ vend des bracelets qui sont utilisés pour la promotion du programme.

Nous avons reçu jusqu'à maintenant 4 000 formulaires d'éva-luation clinique, mais nous croyons que beaucoup plus d'enfants ont reçu une évaluation oculo-visuelle. Nous continuons à souligner auprès des fournisseurs InfantSEE™ l'importance de retourner les formulaires d'évaluation clinique pour les fins de la collecte de données.

Nous analysons en ce moment les données des formulaires d'évaluation clinique qui nous ont été retournés et nous prévoyons publier un rapport provisoire en juin 2006.

Actuellement, 34 % des membres de l'AOA sont inscrits comme fournisseurs du programme InfantSEE™. L'objectif de la prochaine année est d'atteindre 50 %. Une réunion de planification stratégique doit avoir lieu pour discuter de la croissance continue du programme dans l'avenir et pour formuler des plans à cette fin. Sensibiliser davantage le public au programme InfantSEE™ et aux soins oculo-visuels gratuits qu'il fournit demeure une des grandes priorités.

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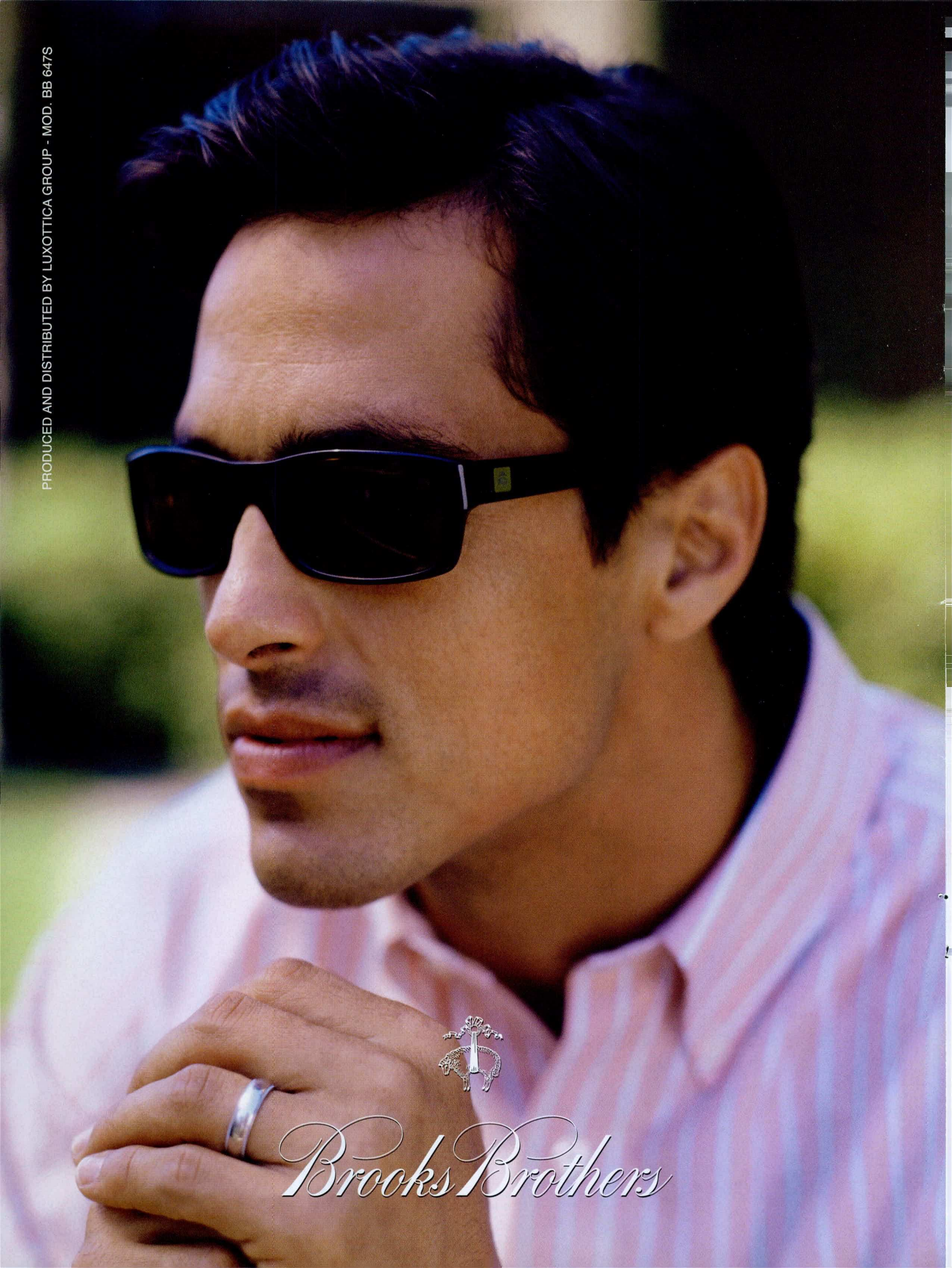
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A Toast to Patients

« À la santé » des patients!

Dorrie Morrow, OD
President / présidente

The New Year is upon us, allowing us to reflect on the past and look towards the future. Futurists are having a grand time predicting changes we will face, while consultants are cautioning us to prepare for the "white waters ahead in the modern health care marketplace". Faced with this forecast, I suggest we pause for a moment and brace ourselves for an optometric journey down a torrid, rapid, rough stream.

If my grandfather were here he would tell us to put faith in our paddles and to always keep them in the water! Optometry is the product of currents both swift and strong. The paddler in the bow looks downstream for trouble – rocks, eddies and snags. The navigator is usually in the stern where one gets a much wider view of the river and is able to judge the shape of the river and steer the boat. As we navigate the future, I hope we look into the deep water, judge the currents and see our own reflection there.

Instead of forecasting what will change, let's for a moment recognize the things that will stay the same. Let's identify the basic elements of eye health and the caring relationships that I believe will form the foundation of optometry's future.

Family optometric practices are based on continuity and we must assume that it is the continuity of our patients' needs and values that will carry optometry's mission forward into the future. Patient care is often defined and shaped by technology, treatment as well as the time that is devoted to providing comprehensive services; however, these forces are more powerful and robust when they are treated and balanced with a human touch.

New technologies may empower patients and optometrists; however, we must not allow these enhancements to overshadow the essence of the doctor-patient relationship. I believe our patients place a high importance on the human aspect of optometric care and agree that not everything that contributes to better patient outcomes can be measured in technological advances alone.

Research often deals with cost-effectiveness analysis and tangible variables, but I contend that not everything that counts can be counted and not everything that can be counted counts. Family optometric practice delivers added value that goes beyond algorithms and stately protocols.

Eye health is more than the absence of disease, and vision care is more than the provision of diagnostic and treatment services. Comfort, confidence and communication contribute to improved outcomes and higher satisfaction for both the patient and the OD. There is enduring value in the more intangible aspects of what we offer. Consider technology, treatment and time balanced with improved communication, continuity and comprehensive care. We must recognize it within ourselves and commit to deliver it daily. This will invariably assist in preparing for our future and those of our patients.

Remember why you became a doctor of optometry and treat each patient, young and old with a generous dose of that elusive but potent "medicine". A toast to our future!

PRESIDENT'S PODIUM
MOT DE LA PRÉSIDENTE

La nouvelle année à nos portes nous offre l'occasion de réfléchir sur le passé et de regarder vers l'avenir. Les futurologues s'en donnent à cœur joie pour prédire les changements auxquels nous ferons face, tandis que les conseillers nous invitent à nous préparer aux eaux turbulentes à venir dans le marché des soins de santé. Devant ces prévisions, faisons une pause et arrimons-nous pour un voyage optométrique qui s'annonce torride, rapide et difficile.

Si mon grand-père était là, il nous dirait d'avoir confiance dans nos pagaies et de toujours les garder dans l'eau! L'optométrie est le produit de courants rapides et forts. Le pagayeur cherche les écueils en aval – rochers et contre-courants. Le navigateur a habituellement une vue beaucoup plus large et peut en évaluer les sinuosités et diriger l'embarcation. En naviguant sur les flots de l'avenir, j'espère que nous regarderons dans les eaux profondes, que nous évaluerons les courants et que nous y verrons notre propre image.

Au lieu de prévoir ce qui changera, essayons de préciser ce qui demeurera inchangé, comme les éléments de base des soins oculo-visuels et notre souci des patients qui, je crois, seront le fondement de l'optométrie de demain.

Les cabinets optométriques familiaux se fondent sur la continuité et nous devons présumer que c'est la continuité des valeurs et des besoins de nos patients qui orientera la mission de l'optométrie pour l'avenir. Les soins aux patients sont souvent conditionnés par la technologie, le traitement et le temps qui est consacré à fournir des services complets; cependant, ces facteurs sont plus puissants lorsqu'une touche d'humanité les anime.

Les nouvelles technologies peuvent renforcer l'autonomie des patients et des optométristes; toutefois, nous ne devons pas permettre à ces améliorations de porter ombrage à l'essence de la relation entre le docteur et son patient. Les patients tiennent en très grande estime l'aspect humain des soins optométriques et seraient d'accord pour dire que tout ce qui contribue au mieux-être des patients ne peut pas toujours se mesurer uniquement à l'aune des progrès technologiques.

La recherche comporte souvent des analyses coûts-efficacité et des variables tangibles, mais je maintiens que tout ce qui a de la valeur ne peut pas toujours être calculé et tout ce qui peut être calculé n'a pas toujours de la valeur. La pratique optométrique familiale ajoute une valeur qui va au-delà des algorithmes et des protocoles de noblesse.

La santé de l'œil est plus que l'absence de maladie, et les soins de la vue sont plus qu'un diagnostic et des services de traitement. Le confort, et la communication contribuent à améliorer les résultats et apportent une plus grande satisfaction à la fois au patient et à l'optométriste. Envisageons la technologie, le traitement et le temps en équilibre avec une communication, une continuité et des soins globaux améliorés. Nous devons trouver cela à l'intérieur de nous-mêmes et l'offrir quotidiennement. Cela préparera sans aucun doute notre avenir et celui de nos patients.

Rappelez-vous pourquoi vous êtes devenu un docteur en optométrie et donnez à chaque patient, jeune et moins jeune, une généreuse dose de cette « médecine » insaisissable mais efficace. « À la santé » de notre avenir!

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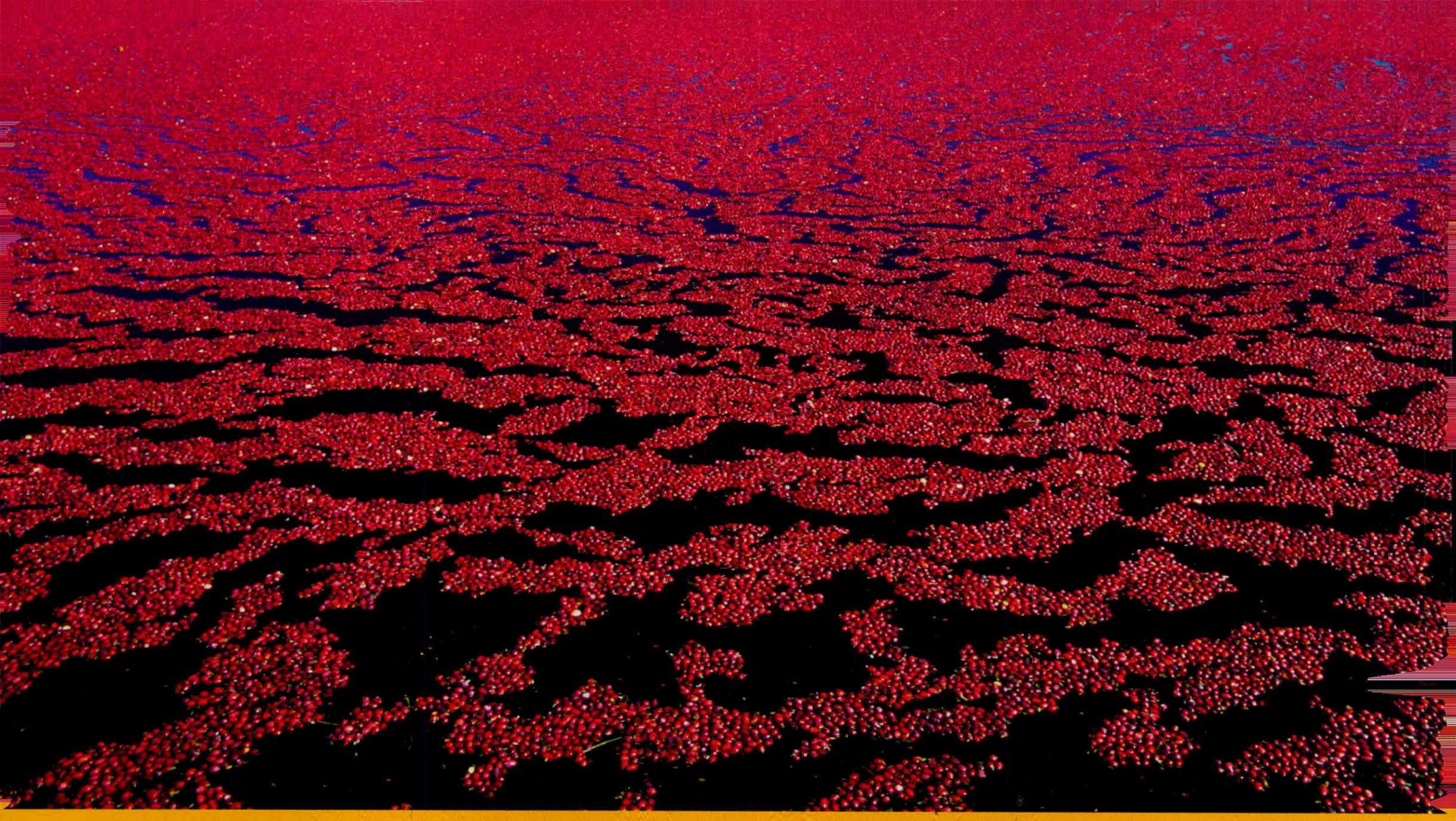

THE WORLD IS BEAUTIFUL > TO LOOK AT

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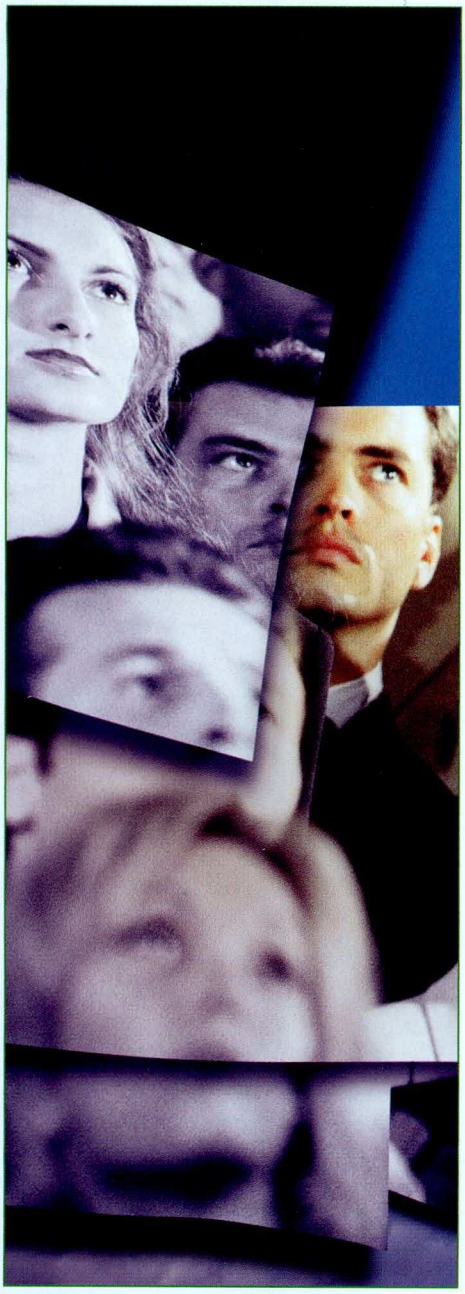
Reference: 1. Environics Research Company, Survey of Optometrists and General Ophthalmologists, April 2004.

Why Good Customer Service is Not Enough

Alphonse Carew
OF, FAAO



Lately I have been reading many interesting books and articles on customer service. I've come to realize that I need to re-evaluate what was once taken for granted about the subject. There is likely a real disparity between what you, as a provider, believe is good customer service and what your patients believe.

The customer service experience can be broken down into three main components. The first level involves the processing of patients. It is the day-to-day systems that are in place to get the patient from check-in to check-out. The second level is what optometrists typically refer to as customer service. Here, we provide support to patients that go beyond the processing of level one service. It includes activities such as helping a patient fill out insurance forms or putting their spectacles back into adjustment - things that have some value to our patients. The third level of customer service is creating a truly valuable patient experience within your practice, making an emotional connection with each patient.

Problems arise when there is a difference in perception of what is good customer service by the patient compared to the perception of the practice. Many of us provide levels 1 and 2 thinking that we have done an exceptional job of processing the patient efficiently and taking care of what we think are their basic needs related to vision care. We feel our job has been completed and now the patient should sing our praises from the rooftops. Levels 1 and 2 customer service, however, have become the

minimum requirements by the patient. They assume that if you don't meet these easily attainable requirements then they won't remain patients of yours anyway. This is now the minimum cost of entry into the customer service game, it is no longer the end-point.

For many practices getting to level 1 and 2 is good enough. At these levels you are getting the job done but it does little to build a strong relationship with your patients. If you consistently perform well at these levels, your the practice will do fine, so why push it to the next level? For the practices that do take on the challenge of pushing to the next level come many inherent benefits.

Level 3 in customer service encompasses the total experience that a patient has with your practice. Above and beyond the "nuts and bolts" of processing and beyond meeting your patient's minimum requirement of typical customer service is the extraordinary customer experience of level 3.

At this third level you have to make an emotional connection with your patients, which can be a compelling experience. You need to show genuine concern and empathy for your patients, resulting in a stronger relationship with them. You must care more for their well-being than the financial benefit to your practice, treat them as if you were going to see them every day, take your time with them, get to know them personally and understand their wants and needs.

It is not enough that you take on this challenge, your staff also have make these connections and relationships. The message to the patient must come from all aspects of your practice. We train our staff on office techniques and procedures but how often do we train on how to make lasting relationships with patients?

This is one area where you should "sweat the small stuff". Lack of attention to details could derail any attempts to provide this level of service. Levels 1 and 2 cannot be ignored for they are necessary to keep you in the game. If you don't provide these, then the patient is likely to walk away from your practice. To get to the highest level of customer service you must pass through the lower ones first.

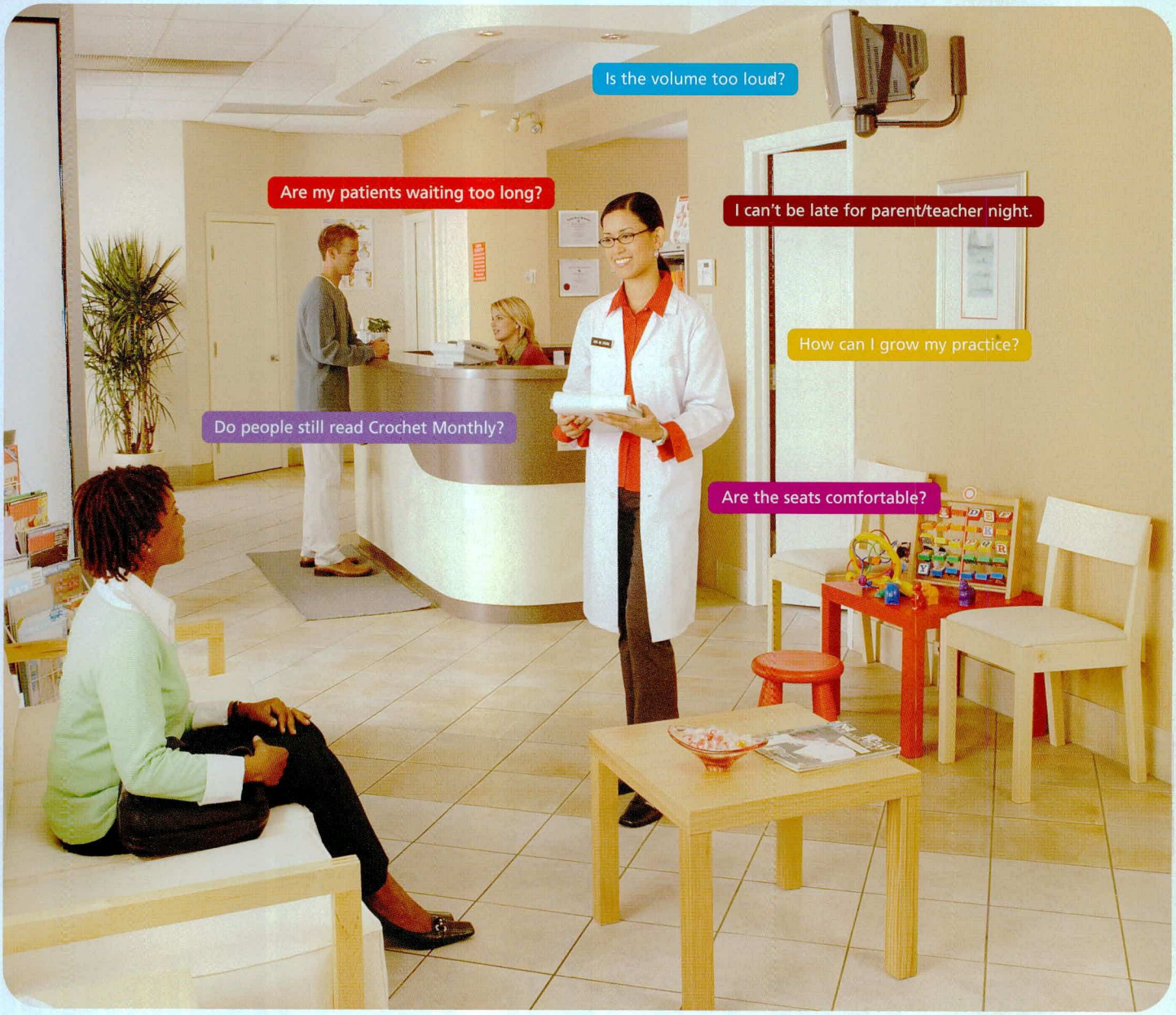
The ultimate benefit of consistently providing the highest level of customer service and forging that strong relationship is turning the customer into a highly loyal patient. The spin-offs of this include improved quality and frequency of referrals, increased margins and sales (along with less price objections as these patients see the value of your practice and will pay for it) and it provides a barrier from other providers taking your patient away.

To ensure practice profitability in the long run you need to create patient experiences that are so compelling that their loyalty is nearly guaranteed.

Top Row (left to right): Drs Gord Young, Roland Des Groseilliers, Margaret Hansen DesGroseilliers & Pat Hamilton. Bottom Row (left to right): Dr Joyce Barbour, Mrs Charna Mittelman, Drs Joseph Mittelman, Aggie Cudowska & Serge Fauchon.

OTTAWA SOCIETY OF OPTOMETRISTS: SHAPING TOMORROW

The highly successful CAO Congress in July, 2005 was planned in partnership between CAO and the Ottawa Society of Optometrists. This included a financial agreement to provide the OSO with a portion of any Congress surpluses. Ultimately, the finances were confirmed and a cheque for $30,000 was issued to the OSO. Dr. Joseph Mittelman, Chair, Congress Planning Committee is pleased to announce that the OSO will use the Congress proceeds to establish a scholarship that will award an annual grant to an Optometry student from Eastern Ontario. The decision was ratified at an OSO meeting on November 21, 2005. CAO wishes to congratulate the OSO on its decision to support Optometric education.



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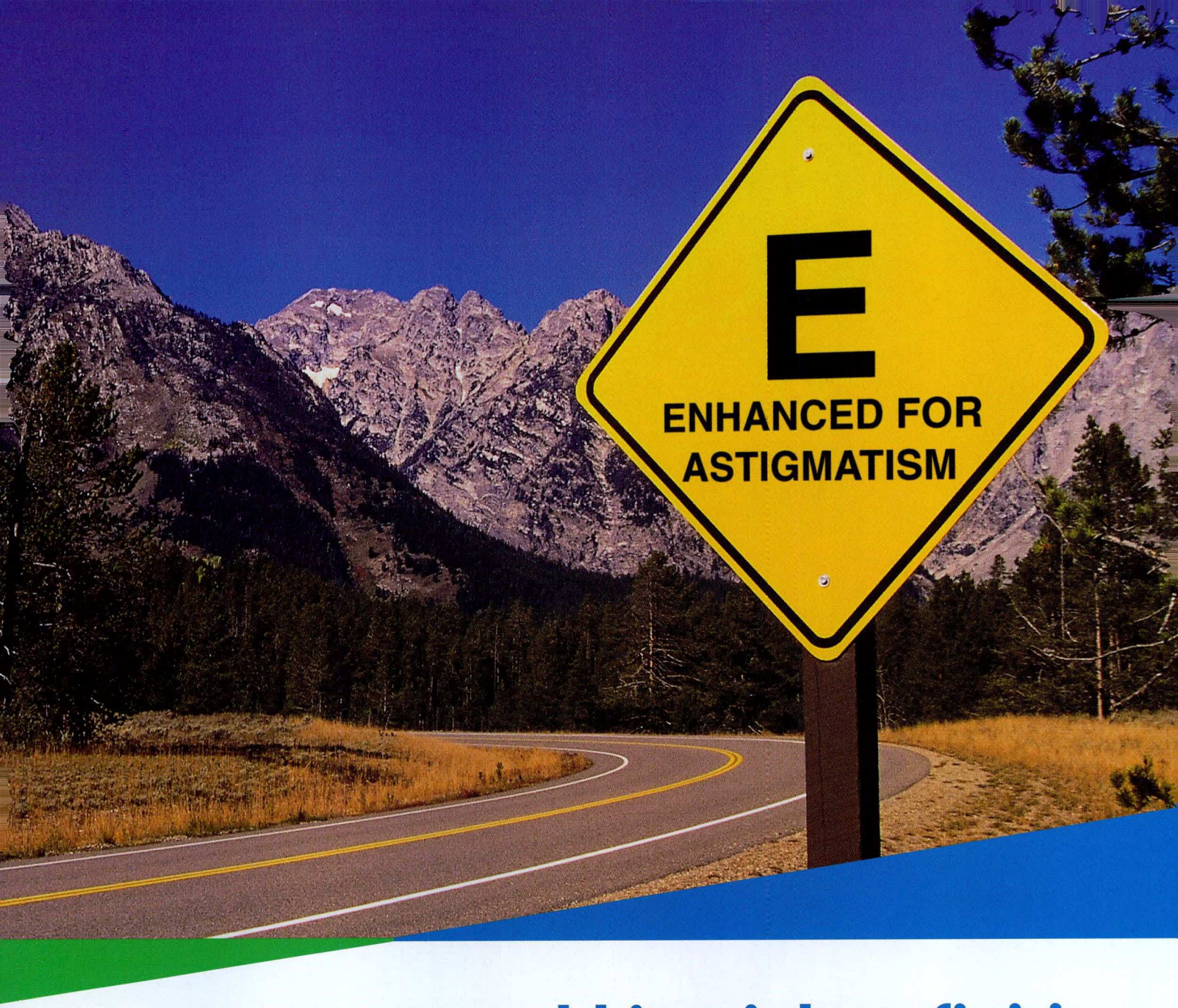

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ARTICLE ARTICLE

How You Should Examine Infants and Toddlers

Here are seven essential components for the examination of an infant or toddler, and within each component, practical tips.

Vision disorders are prevalent in infants and preschoolers. A report of children between the ages of 6 months and 6 years showed that 33% had hyperopia, 22.5% had astigmatism and 9.5% had myopia.[1] Also in this age group, 5% had binocular vision disorders, 21.1% had strabismus, 7.9% had amblyopia, 1% had accommodative disorders and 0.5% had retinal problems.[1]

In addition, children who have poor visual efficiency or lack of refractive correction can have serious learning problems.[2] In fact, children who are described as struggling in school are often in need of significant hyperopic, astigmatic or myopic corrections. Corrections to these conditions, in turn, have been shown to make significant differences in classroom performance.[2] Studies have also shown that the earlier the visual problem is diagnosed, the better the overall prognosis, as the intervention occurs sooner rather than later.[1]

For the above reasons, Kentucky passed House Bill (HB) 706, which requires each child in the state to receive a comprehensive eye examination by an optometrist or ophthalmologist before starting public preschool, public school or the Head Start Program.[3] Since HB 706 passed in July 2000, several other states have followed Kentucky's lead by introducing similar laws. This means that the number of infants and toddlers entering U.S. optometric practices could increase considerably. Also, the American Public Health Association recommends that first eye examination be given at 6 months, then at 2 years and then at 4 years.[4]

As optometrists, we cannot only reach out to this severely underserved population, but also be prepared for the possible influx of pediatric patients in the coming years.

In this first installment of Review of Optometry's three-part series, "Pediatric Practice," I'll discuss the various components of an infant and toddler eye examination.

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by Christine L. Allison OD, FAAO, FCOVD

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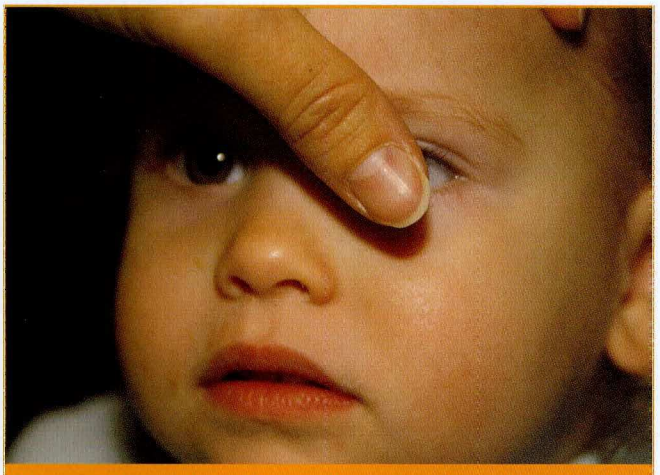


The practitioner's thumb is a much less intrusive occluder for the young child, and it covers each eye extremely well.

1. Initial Encounter

While you want to establish a rapport with the child's parent, establishing one with the child is equally important. A child is acutely aware of the presence of someone new, and he is used to getting all of the attention. If you ignore the patient in favor of the parent only, the child will likely become afraid and uncooperative.

To begin with, I do not wear a white doctor's coat, as many children have had prior uncomfortable, frightening experiences with others who have worn this piece of clothing. I try to establish a connection with my young patients by introducing myself to him or her while making direct eye contact and smiling. (You may want to introduce yourself using your first name and not Dr., as some children are afraid of doctors.)

When you make eye contact and say a few kind words, you not only put the infant or toddler at ease, but you assure the parents that you are comfortable examining their child. One way I make my toddler patients happy and comfortable: I comment on and ask questions about any characters these children often have on their clothing.

Another suggestion: If your patient is a toddler, tell him what he can expect before you conduct any portion of the exam. This helps allay any fears he may have. Keep your explanation brief, as a child's imagination can run wild and cause him to panic. For example, before you seat the child behind the slit lamp, assure him that all he must do is look through the holes and try to see the doctor's eyes. There's no point in going into detail about what you are looking for; the patient will not understand, and he may become frightened. How you interact with the child not only sets the tone of the entire examination; it may actually determine the examination's outcome.

2. Case History

Questions regarding the patient's ocular history, medical history, family history, allergies and use of medications are a standard part of any case history. When the patient is an infant or toddler, however, you also must ask questions about the prenatal, perinatal and postnatal periods, and about the child's developmental history.

One important question to ask the parents: Was your child born at full-term? The answer to this ques- tion is important because premature infants are more likely to be placed on oxygen shortly after birth, which increases their risk for retinopathy of prematurity.[5]

Because the parent can become so preoccupied with the child during the examination, he or she may not answer your questions accurately. So, you may want to mail or fax a standard questionnaire before the child's appointment to ensure the questions are answered thoroughly and correctly.[6]

How to Prepare for the Infant/Toddler Exam

Here are two additional ways you can prepare for the infant/toddler exam:

- ***Make sure your office is child friendly.*** This means you should have plenty of toys, coloring books and perhaps even a television playing the latest G-rated movie.
- ***Have your receptionist schedule appointments when the child will likely be in the best mood.*** This is often first thing in the morning or right after a nap. This way, you and the parent can avoid fussiness during the infant or child's examination. However, the child's nap or feeding time may come up in the middle of the exam, so be prepared to break. Also, have the parent bring a snack along. –C.A.

3. Visual Acuity

While visual acuity techniques are quite limited for an infant, we have more choices than we did in the past. You can check acuity using:

- *A transilluminator or toy.* Place one of these engaging targets in your hand, then slowly move the object to see if the baby can fixate and follow with each eye. You can first do this binocularly, then use your hand to cover each patient's eye, and assess the fixation monocularly. While this technique cannot give you a numeric visual

acuity value, it can help to determine any large visual differences between the eyes.

✏ *An optokinetic drum.* You can use this device to determine wheth- er there is a cortical visual response. Specifically, you can slowly turn the instrument horizontally and vertically in front of the infant to assess that some vision is getting into the cortex.[6,7]

To use the optokinetic drum, hold the device with the stripes going vertically in front of the infant. Slowly spin the drum, and look for the infant's eyes to show a nystagmus movement. This test only takes a few seconds, and the device's stripes are enough to keep the child focused.

✏ *Teller acuity cards.* This forced choice preferential acuity test is an accurate way to a more numeric value for the visual acuity of the infant.[8,9]

Start this test by holding a higher acuity card in front of the infant at 55cm. This card will have black and white stripes on one side and a blank space on the other. (Ideally, you want to perform this test in a room that has nothing in it, so all the infant has to look at are the stripes on the card.)

Look through a small hole in the card to see if the infant looks at the black and white stripes as opposed to the blank space. To determine the threshold acuity value, move through the cards from higher to lower acuity values until the child no longer attends to the task.

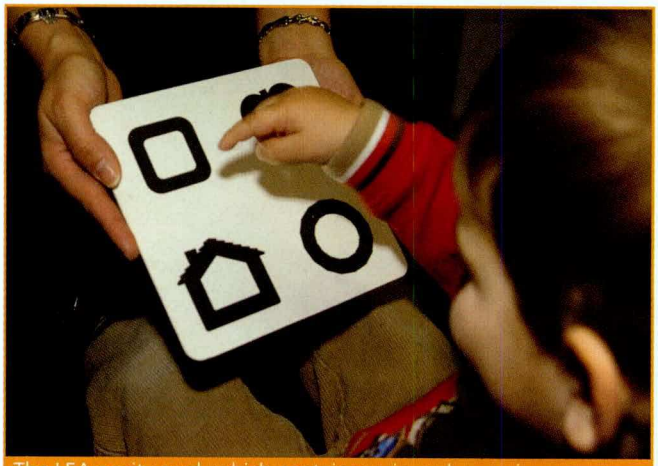
✏ *Electrodiagnostic testing, such as visual evoked potentials.* This is a very accurate way to achieve numerical values for the visual acuity in infants. However, very few optometrists incorporate these devices into their practices, as such testing requires a more elaborate set-up and more advanced training.[10,11]

✏ *LEA acuity cards.* The above techniques, particularly the Teller acuity cards, are all possible options for toddlers ages 1 to 3.[8,9] But, as the child approaches age 2, she often can do the simple symbol matching techniques of the LEA acuity cards.[8,9,12]

These cards come in two formats. If the child has enough verbal skills to tell you the differences between shapes, do the following: Place the card with the shapes 10 feet away from the patient. Ask her to tell you what she sees, depending on what you point to. Or, you could have the patient name each object from left to right. (The card's shapes will keep the child's attention.)

If the toddler does not yet have sufficient verbal skills, give her a smaller card that has the same shapes. Then point to an object on the larger card that is located 10 feet away, and ask the patient to point to the same object. This technique can be time consuming, but it often gives accurate results, and it is the first test that can provide near visual acuity information as well when a near version of the symbol card is used.

✏ *"Broken Wheel" test.* Another forced choice test that works well for toddlers is the "Broken Wheel" test. Most toddlers are familiar with the concept of the wheels on a car, and can often be cajoled into pointing to the "broken" one.[13]



The LEA acuity card, which contains various shapes, is one way you can assess the young patient's visual acuity. This patient has been asked to point to the square.

4. Motility, Pupil and Color Vision Testing

You assess extraocular motility throughout the examination by direct observation of the child's eyes and by watching his eyes follow moving objects, such as your transilluminator or a small toy. To test extraocular motility, take a toy that is interesting to the child, and move it in front of him. Watch how the patient's eyes move, both binocularly and monocularly.

You can easily perform pupil testing by using a bright light and watching the pupil reaction, just as you would for a patient of any age.

Although color vision testing cannot be done on an infant, a two- to three-year-old child may be able to respond to a simple color vision test, such as the Color Vision Made Easy test. The test plates contain a circle on each plate, as well as a star and/or square.[14] To perform this test, place the card 16 inches away from the patient.

Both his eyes should be open. Then ask him to point to the circle on each card.

5. Binocular Posture

Children often present to the optometrist because strabismus is suspected. So, you want to evaluate binocular posture as thoroughly as possible. Several possible methods for doing this include:

✏ *Cover testing.* This is the gold standard, and it can be informative. But, use of the appropriate targets is crucial.

To keep the patient's attention while performing the cover test, use a small toy or sticker that can engage the child for more than a few seconds. Talk to the patient about the target, and ask him questions about it to keep his attention. Another suggestion: Use your thumb (held close to the child's eye) instead of an occluder to cover each eye. I have found that my thumb is much less distracting to children than a large piece of plastic coming into their view.

✏ *Hirschberg/Kappa test.* This test should be the next course of action if you are unsuccessful with the cover test.

Perform this test while the child is seated, either by himself or on the parent's lap. Hold your transilluminator 33 to 50cm away from the patient, and shine the light at the bridge of his nose. Ask the patient to look at the light. (To keep him focused on the light, put your fingertip at the end of the transilluminator and flash the light randomly.

Note the position of the corneal reflexes in relation to the center of the pupil. Estimate in millimeters the position of the reflex from the center of the pupil for each eye.

Repeat the test with the patient monocular (Kappa), and hold the transilluminator in line with the center of each eye. Compare the results of the binocular (Hirschberg) and Kappa tests to determine the fixating eye.

If the reflex is in the same position under monocular and binocular conditions, then that eye is fixating. A relatively temporal reflex in one eye suggests esotropia. A relatively nasal reflex suggests exotropia. A relatively higher reflex suggests hypotropia of that eye. Finally, a relatively lower reflex suggests hypertropia of that eye. Keep in mind that 1mm of displacement equals 22 prism diopters.

The young patient looks at the transilluminator during the Hirschberg/Kappa test.

✏ *Krimsky test.* If you can keep the patient's fixation long enough to find the prism value that equalizes the binocular reflexes, the Krimsky test is another way to estimate the prism value. Perform this test after performing Hirschberg Kappa tests by placing a prism in front of the fixating eye. Both the patient's eyes should be open. Then, find the prism value that aligns the corneal reflex of the non-fixating eye to the initial position of the fixating eye. Record the magnitude of the prism used to estimate the size of the strabismic angle.

✏ *Bruckner test.* This test can objectively assess whether there's possible strabismus by using the ophthalmoscope held at 100cm and comparing the red reflexes. To do this test, dim the room lights, and keep the patient directly in front of you. Hold your ophthalmoscope approximately 1 meter from the patient. Look through the ophthalmoscope so that you can get a clear view of both eyes at the same time. (Having you directly in front of the patient is enough to keep his or her focus.) Compare the fundus reflexes. An eye with a whiter, brighter reflex may be the strabismic eye.

✏ *Nearpoint of convergence test.* This test, performed with an interesting target, can address the child's gross convergence ability. A child as young as 6 months should be able to perform this test.[15] To do this test, have the infant/child look at a detailed target, such as a sticker or toy. (*The target must be enticing enough to keep the child's eyes on it.*) Move the target toward the patient until you see an eye turn out or the eyes converge all the way to the patient's nose.

6. Refraction

To evaluate the refractive status of an infant or toddler, perform a retinoscopy, whether undilated or with cycloplegia. There is no specific advantage to doing either one. The use of auto-refractors is not encouraged with this population, as the results are not proven to be accurate.

You can perform traditional distance retinoscopy on an infant or toddler with the help of a DVD or video. For example, I had one patient watch a "Sesame Street" video. To keep the child still and engaged, I asked him questions about the video depending on what I heard. So, if I heard a new voice, I'd ask, "Who's that?"

Dr. Allison performs a retinoscopy on this young patient using a loose lens. infants and toddlers are often too small to fit behind the phoropter.

If you plan to perform a dilated retinoscopy, whether with tropicamide or cyclopentolate, realize that no child likes to receive eye drops. So, you may want to follow these tips:

- *Use a spray rather than an eye dropper. Children do not like being forced to lie down while the practitioner pries their eyes open.*
- *Do not mention the possibility of pain or stinging. This will only frighten the child into refusing to accept the drop.*
- *Put a drop or the spray into a doll's or stuffed animal's eye before you administer the drops to the patient.*
- *Show the patient a sticker or a small toy that he will receive after you administer the drop or spray.*

Since the child is usually too small to fit behind your phoropter, use lens racks or loose lenses. Consider performing a retinoscopy before and after the dilation whenever possible to improve the accuracy of the results and to ascertain the full amount of hyperopia or astigmatism that may be present. Another method of retinoscopy for the infant or toddler is Mohindra retinoscopy. (See "*How To Perform Mohindra Retinoscopy.*")

How To Perform Mohindra Retinoscopy

- Seat the child comfortably in the center of the room, either by himself or on the parent's lap, and occlude one eye.
- Turn off all the room's lights to ensure total darkness. Encourage the child to focus on your retinoscope light. (The complete darkness of the room will facilitate this, and the small light will get the patient's mind off of the dark.)
- Perform the retinoscopy at a distance of 50cm from the patient. As with cycloplegia retinoscopy, use loose lenses or sciascopy bars, but do not use the phoropter.
- Calculate your gross findings. Add -1.25D to your gross findings to determine the final value. This method can lead to very accurate results as long as you remember to convert his or her findings with a value of -1.25 instead of the usual working distance.[16,17]
- Repeat all of the above on the child's other eye.

7. Anterior Segment Exam and Dilated Fundus Evaluation

The anterior segment evaluation of an infant or toddler can be performed using a number of simple devices. It is no different than the anterior segment evaluation of any patient. The use of a hand-held slit lamp, a Burton lamp or a 20D lens with a light source can give appropriate magnification to observe the details of the anterior segment. If staining of the corneal surface is necessary, you can quickly instill sodium fluorescein and easily view the anterior segment with the cobalt filter on either the hand-held slit lamp or the Burton lamp.

To adequately evaluate the fundus, the child will need to be dilated using either drops or spray.[18] For infants younger than age 1, the standard for dilation is one drop of 0.5% tropicamide and one drop of 2.5% phenylephrine. For cycloplegia of the infant, 0.5% cyclopentolate with 2.5% phenylephrine can be used. For toddlers past the age of 1, 1.0% tropicamide or 1.0% cyclopentolate along with 2.5% phenylephrine can be used.[19] Some additional pearls on how to administer a drop or spray to the young patient:

- *Tell the child that the drop or spray will make his eyes glow like a superhero (particularly after the use of fluorescein).*
- *Distract him with an entertaining DVD or video.*
- *Talk to the patient about his favorite character in the DVD or video.*

The best way to measure intraocular pressure in an infant or toddler is with a hand-held applanation tonometer. You can attempt non-contact tonometry as well; however, the results are often better with a hand-held applanation instrument, as you often cannot fit an infant or toddler into the non-contact tonometer.[6]

Dr. Allison performs a retinoscopy using a loose 20D lens, while the young patient's head is tipped back into Dr. Allison's lap. This position gives the parent more control of the child, while the child is still comfortable.

Once you've administered the dilation agents, encourage the child to relax. If the child's naptime is near, allow him to sleep. In fact, you may want to know ahead of time when the patient's nap and feeding times are, because a dilated fundus evaluation on a sleeping child, or even a child who is contently sucking a bottle or eating a favorite snack, is quite easy.

The primary goal of the dilated fundus evaluation is to view the posterior pole of both eyes. Views of the peripheral retina should be attempted, but will not always be seen. When performing the dilated evaluation, the infant may be held over a parent's shoulder. That way, the parent can hold the child's head still while you prop open the patient's eyes. Or the child may sit or lie in the parent's lap.

Another effective position: Have the toddler straddle their seated parent's waist while the parent tips the child's head back into your lap. This can give you and the parent great control of the child, while the child is still comfortable.

All of the above tests must be done as objectively as possible. While a toddler may be eager to answer your questions about his vision, those answers may not be correct.

There is no doubt that infants and toddlers can be challenging patients. But, by being creative, accommodating and kind, you will not only get the examination results you need, but a happy and trusting child and parent who will not only seek your services in the future, but refer friends and family.

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ARTICLE ARTICLE

Parents Awareness of Vision Care Issues in Children Ages Four to Six

Abstract: *Previous studies have shown that less than 15% of children receive an eye examination before age six. A reason for this lack of vision care may be (related to) poor parent education. Using a questionnaire, we surveyed parents with a child between ages four and six to investigate their awareness of child vision care. Results indicate that most parents (73%) took their child for an exam before age six, but few parents (5%) took their child at the (CAO recommended) age of six months. Parents therefore have a high degree of vision awareness, but further education is necessary to increase the percentage of children obtaining eye examinations at an earlier age.*

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Key Words:
paediatric optometry; visual development; vision and learning; vision awareness; eye examination

Mots clés:
Optométrie pédiatrique; développement de la vision; vision et apprentissage; sensibilisation à la vision; examen de la vue

Introduction

Vision disorders are common among the paediatric population in Canada; with an estimated 25% of children between the ages of 0-18 affected.[1,2] It has been well documented that the earlier a vision problem is diagnosed and treated, the less the negative impact on a child's development. Clinical experience and research have shown that at six months, the average child has reached a number of critical milestones, making this an appropriate age for the first eye and vision examination.[3] At this age the average child can reach for and grasp a toy with one hand, sit up with support, and is cognitively aware of their surrounding environment.[4] Visual acuity (visually evoked potential - VEP), oculomotor skills (saccades, pursuits, fixation), binocularity (alignment, near point of convergence, stereopsis), and accommodation (accuracy) all develop rapidly from birth, many functions reaching near adult levels by the age of six months.[5]

By six months of age, manifestations of

strabismus, high refractive error, and anisometropia can be detected. While treatment varies depending on the degree of severity, when clinical intervention is indicated it should be initiated as soon as possible. There is increased success when the condition is diagnosed and treated between birth and one year. Delaying the onset of treatment can impair binocular interaction and/or acuity development, and may inhibit future perceptual, cognitive and social development.[6]

Despite studies that have demonstrated the prevalence of eye and vision disorders in children, it has been shown that only 5% of children between the ages of 0-4 years receive a comprehensive vision examination.[7] The reason so few children receive professional eye care is uncertain. Possible explanations include a reliance on optometrists and/or primary care physicians to inform parents of the appropriate age to bring their child for a complete oculo-visual examination, and parents' lack of knowledge regarding the need for early professional eye care to prevent unnecessary loss of vision and promote visual development.

In order to understand the barriers and reasons why the majority of young children are not receiving eye care, we explored parents' awareness of vision care issues in children. We surveyed parents with children between the ages of four and six and asked them questions regarding their child's current vision care and their beliefs on the role vision plays in the learning process.

Methods

Parents with children between the ages of four and six years in the cities of Kitchener-Waterloo, and Guelph, Ontario were asked to complete a written questionnaire. The Waterloo sample was randomly selected from parents whose child was enrolled with the Waterloo Minor Hockey Association and the Kitchener-Waterloo Skating Club. The Guelph sample was selected from the parents of children who attended the Upper Grand District School Board. Surveys were given to 585 participants; 180 in Kitchener-Waterloo, and 405 in Guelph.

The survey asked questions about parents' awareness of vision care issues in children between the ages of four and six (see Appendix 1). The survey was divided into two parts: the first part asked parents to answer vision care questions regarding their child aged six or under. If parents had more than one child under the age of six, they were asked to answer the questions pertaining to the child who was closest to six years of age. In the second part, parents were asked their opinions on the role vision plays in the learning process. The research was approved by the Office of Research Ethics at the University of Waterloo.

Results

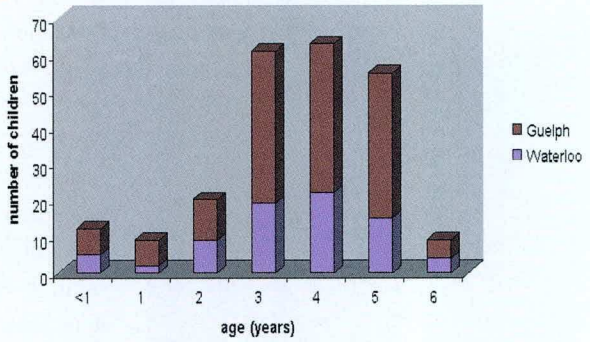
A total of 114 (63%) people in Kitchener-Waterloo, and 232 (57%) people in Guelph, responded to the survey. The age of participants ranged from 21 to 61 years, with 252 participants female and 94 male.

The majority of parents reported their child had his/her eyes examined before the age of six (76% in Kitchener-Waterloo, 71% in Guelph). From this group, 61% in Kitchener-Waterloo, and 59% in Guelph had taken their child to an optometrist for his/her first eye examination. There was no significant difference in the distribution between Kitchener-Waterloo and Guelph (chi squared test, $p = 0.732$).

The distribution of the age at which children were taken for their first eye examination is shown in Figure 1. The majority of parents (28%) took their child to an optometrist for their first eye examination at four years. Again there was no significant difference in the distribution between Kitchener-Waterloo and Guelph (Kolmogorov-Smirnov test, $p=0.516$). Since the Guelph and Kitchener-Waterloo results were similar in these respects, they have been combined for the rest of the analysis.

The reasons that parents took their child for a vision exam are shown in Figure 2. While most participants (61%) stated they did not notice a visual or ocular problem with their child but felt his/her eyes should be

Figure 1



Histogram showing age of first eye exam by optometrist.

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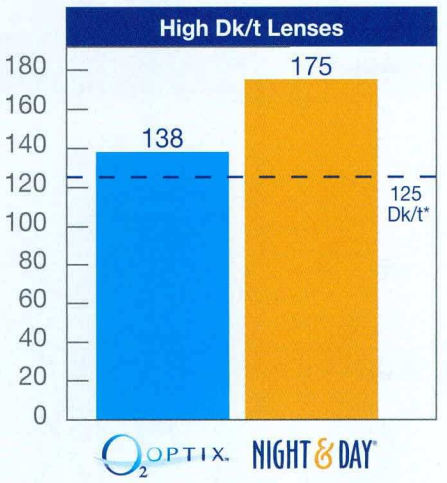

*A Dk/t level of 125 has been confirmed by 4 independent researchers to be an important value for overnight wear[1, 2, 3, 4]

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*O_2OPTIX Dk/t = 138 @ -3.00D. NIGHT & DAY Dk/t = 175 @ -3.00D. Other factors may impact eye health.

References: 1. Harvitt DM, Bonanno JA. Re-evaluation of the oxygen diffusion model for predicting minimum contact lens Dk/t values needed to avoid corneal anoxia. Optom & Vis Sci 1999:76(10):712-719. 2. Sweeney DF. Clinical signs of corneal hypoxia with high Dk soft lens extended wear: Is the cornea convinced? Eye & Contact Lens 2003:29(1S):S22-S25. 3. Papas E. On the relationship between soft contact lens oxygen transmissibility and induced limbal hyperaemia. Experimental Eye Research 1998: 67:125-131. 4. Ghormley R. How Much Oxygen is Enough for Safe Lens Wear? Contact Lens Spectrum, March, 2005, 19. 5. AFM contact mode. 5 x 5 micron resolution. CIBA Vision. Data on file, 2005. 6. AFM contact mode. 20 x 20 micron resolution. CIBA Vision. Data on file, 2005.

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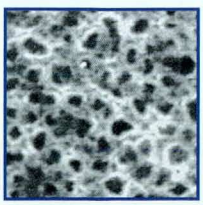
O_2OPTIX[5]

Both O_2OPTIX and NIGHT & DAY feature a permanent, chemically bonded plasma treatment for a smooth, continuous surface

NIGHT & DAY[5]



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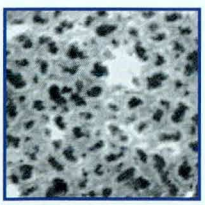

ACUVUE® OASYS™ [5]
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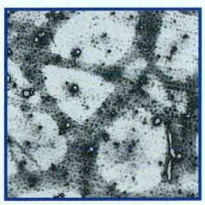

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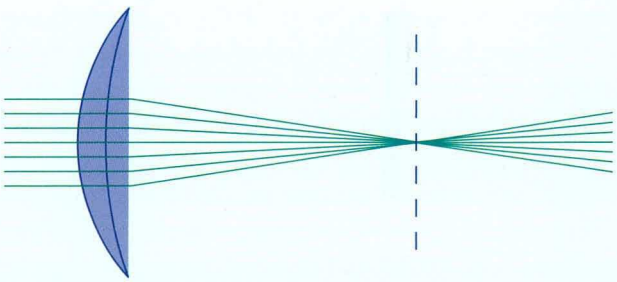

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examined, respondents also commented they wanted to get their child's vision checked prior to starting school. Of the participants whose children had never had a vision examination by an optometrist, 78% stated the main reason for not taking their child to an optometrist was because no vision or eye problems had been noticed (by the patient and/or parent).

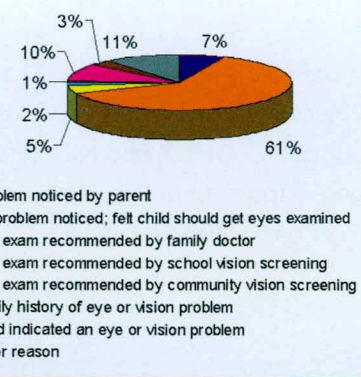
To analyse the results for the second part of the questionnaire the participants were divided into three groups dependent upon whether their child had received eye care or not. Group 1 represented children who had been examined by an optometrist; group 2 children who had not had any type of vision exam or screening; and group 3 children who had a vision screening but had not been examined by an optometrist or ophthalmologist. The groups were compared with respect to the parent's opinions regarding vision and learning based on current child vision care.

There was no statistically significant difference in the way in which the question relating to what percentage of learning was achieved through vision was answered (Kolmogorov-Smirnov test, group 1 and 2, $p = 0.820$, group 1 and 3, $p = 0.320$, group 2 and 3, $p = 0.320$). The majority (52%) thought that 80% of learning was achieved through vision The follow-up question (what percentage of children with a learning disability, they believed, also had undetected vision problems), received a more varied response. Again, there was no significant difference between the groups (Kolmogorov-Smirnov test, group 1 and 2, $p = 0320$, group 1 and 3, $p = 0.080$, group 2 and 3, $p = 0.320$). The combined results can be seen in Figure 3.

Hypothetical scenarios were given to participants to determine their knowledge of screenings vs. vision examinations. Two similar cases were presented. The first case asked parents whether they believe their child would still require a full eye examination by an optometrist if their child had recently passed a school vision screening. While the majority of respondents answered "yes" (80% for all three groups), there was a significant difference between groups 1 and 2, and groups 1 and 3 (chi-square test; group 1 and 2, $p = 0.004$, group 1 and 3, $p = < 0.001$). However, there was no difference between groups 2 and 3 (chi-square test, $p = 0.679$). Case two asked participants whether they believe their child could still have an undetected vision or eye problem if they had recently passed a vision screening at a local health fair. Again, while the majority of respondents answered "yes" (83% for all three groups), there was a significant difference between groups 1 and 2, and groups 1 and 3 (chi-square test; group 1 and 2, $p = < 0.001$, group 1 and 3, $p = 0.003$), but no difference between groups 2 and 3 (chi-square test, $p = 0.128$). Based on these results, it appears parents who have taken their child to an optometrist are less likely to rely on vision screening outcomes versus parents that have never taken their child for a full eye examination.

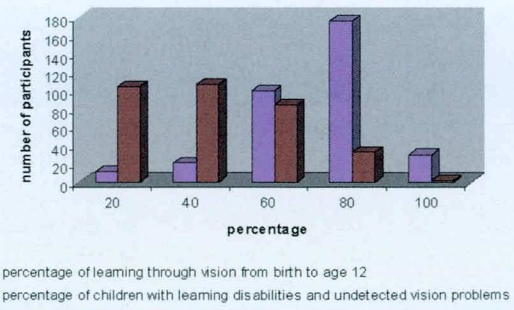
Another case presented a child who had a right exotropia in primary gaze. This case asked parents where they would take their child for an examination if they noticed this ocular deviation. Seventy-eight percent of participants in group 1 said they would take their child to an optometrist. Respondents in group 2 were divided among taking their child to a family doctor (43%) versus

Figure 2



Reasons for child's initial eye examination by an optometrist.

Figure 3



Histogram showing parents responses of the percentage of learning that occurs through vision and the percentage of children with learning disabilities who also have undetected vision problems.

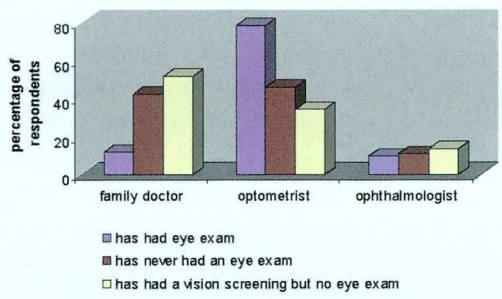
an optometrist (43%). The majority of participants in group 3 indicated that they would take their child to a family doctor's office or paediatrician's office for an eye examination (52%). Again, there was a significant difference with parents who have previously taken their child to an optometrist versus parents who have never taken their child; with parents who had taken their child being more likely to seek initial advice from an optometrist rather than a family physician (chi-square test; group 1 and 2, $p = < 0.001$, group 1 and 3, $p = < 0.001$). Figure 4 shows the percent response rate of all three groups.

The last question in the survey asked parents the age at which they would take their child for his/her first eye examination, assuming no vision or eye problems were noticed. While the majority of participants in group 1 indicated that they would take their child between the ages of 2 and 4 (52%), parents in group 2 indicated that they would take their child between the ages of 6 and 10 (40%), and those in group 3 were equally divided between ages 4 and 6 (25%), 6 and 10 (25%) and when the child reports problems seeing (25%). There was, again, a significant difference among parents who have taken their child to an optometrist versus parents who have never taken their child (chi-square test; group 1 and 2, $p = < 0.001$, group 1 and 3, $p = < 0.001$), but no difference between parents whose child has never had any vision care versus parents whose child has had a vision screening (chi-square test, $p = 0.064$). The age at which each group would take their child for an eye exam is shown in Figure 5.

Discussion - *Vision Care*

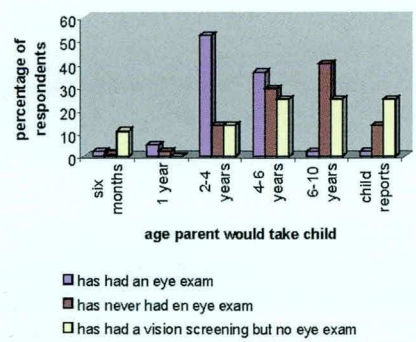
Certain aspects of the findings reported here are encouraging. For example, 73% of parents overall reported that they had taken their child for an eye examination by the age of 6 years. This number is quite surprising, since most studies and articles document a much lower percentage. For example, Vision Service Plan's: Children's Vision Awareness Study (April, 2002) reports 52% of parents surveyed had taken their child by age 12 to an eye care specialist (optometrist or ophthalmologist).[8] The Canadian Association of Optometrists (CAO) and American Association of Optometrists (AAO) both estimate that only 14% of children age 6 and under receive professional eye care by an optometrist.[9,10] Also, according to Ontario Health Insurance Plan (OHIP) data from the fiscal year 2001-2002, only 5% of eligible children between the ages of 0-4 years received a full eye examination.[11] A reason for the increased number of children receiving vision examinations in our population may be due to the location where the study was conducted. While every effort was taken to acquire a random sample, 3 out of Ontario's 20 universities are located in the cities of Kitchener-Waterloo and Guelph. One of those cities is the home of the only Canadian English speaking School of Optometry, which may be a factor, although it should be noted that there was no difference between Kitchener-Waterloo and Guelph in our sample. Although it is uncertain whether education plays a factor towards increased child vision awareness, a more random sample throughout the province may be needed to determine the more general applicability of our findings.

Figure 4



Histogram to show the first professional a parent would take their child if a strabismic deviation was noted. The data are split into those who had already taken their child for an eye exam, and those who had not.

Figure 5



Age parents would take their child for their first eye exam if no problems were noticed

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Another encouraging statistic is that 61% of children had been taken for an eye exam even though no problem was noticed. Again, this number is higher than expected in comparison to previous studies – Vision Service Plan's: Children Vision Awareness Study (April, 2002) found 23% of parents surveyed felt their child's eyes needed to be examined.[12] While education may play a role in increased vision awareness in children, the availability of optometric care may also be a contributing factor. Based on the number of optometrists registered with the College of Optometrists of Ontario in May 2005, 8.8% of optometrists were registered to practice in the city of Waterloo (population: 86 543). In comparison, only 1.4% of registered optometrists practice in Whitby, ON, a city of approximately the same size (population: 87 413).[13] Having a larger percentage of optometrists in a city may be a factor in creating awareness to the public regarding the need for routine vision examinations.

Most jurisdictions publish guidelines which recommend when a child should receive his/her first ocular visual examination. These clinical guidelines for vision vary across the country. The CAO and the Ontario Association of Optometrists (OAO) recommend that a child receives his/her first vision examination at six months.[14,15] The results of our study are consistent with previous studies in this respect - only 5% of parents surveyed took their child for a vision examination at the CAO recommended age of six months. From our findings, it appears parents are aware of the need for vision examinations in children before school, but are unaware of the need to have an examination at six months of age. Provinces such as British Columbia, New Brunswick and Newfoundland, however, recommend that a child should have an eye examination by the age of three years.[16,17,18] The lack of consensus among optometry associations throughout the country sends inconsistent information to the public and to optometrists themselves. From our survey, while many parents did take their child for a vision examination, 54% of parents took their child between the ages of three and five years. However, rapid changes occur in most components of the visual system (visual acuity, accommodation, and binocular vision) within the first six months of life.[19] Interference with development during this very critical phase may lead to serious lifelong effects on vision. Successful treatment of a visual condition is more likely with early intervention. Visual problems can also have a significant impact on learning in the formative years (e.g. pre-school) and school years.[20] Results from previous studies, for example, show adverse effects of amblyopia on academic achievement.[21] Early detection and management may therefore result in more successful treatment and fewer academic difficulties. Unfortunately, there is a common misconception that congenital or early childhood eye disorders can be 'seen'. Previous research has found children whose amblyopia was diagnosed at the age of school entry were more likely to have small angle strabismus or anisometropia – conditions that often cannot be detected by observation alone.[22] Uncorrected hyperopia can also have detrimental effects on cognitive development and learning yet it cannot be detected by observation and may remain undetected by vision screenings.[23,24]

Vision and Learning

In general, most parents' surveyed felt vision was an important component to the learning process, recognizing the interrelationships between vision problems and learning difficulties. Interestingly, there was no difference in these attitudes between the parents who had or had not taken their child for an eye examination by the age of six years. The majority of parents who had never taken their child to an optometrist also felt vision played a critical role in academic achievement. Parents appeared to understand that while vision problems generally are not the sole cause of learning disorders, a fairly high percentage of children with learning disabilities may have a vision problem. U.S. statistics report 25% of school age children have undiagnosed vision problems.[25] Hoffman's study confirmed this statistic by comparing children with learning problems to children without learning problems, concluding children with learning problems have a high incidence of vision-related problems.[26] Simons and Gassler (1988), in a meta-analysis study, concluded that hyperopia, near exophoria, vertical phoria, and anisometropia are clearly linked with reading ability.[27] A more recent study has shown that children with uncorrected hyperopia lag behind in early literacy.[28]

Comparison of opinions between parents who had

taken their child to an optometrist and those who had not yielded significantly different results regarding treatment and management of a hypothetical child. From our survey, it appears that parents who have taken their child to an optometrist are less likely to place reliance on vision screening results. They also appear to be more educated regarding the role of an optometrist. Parents who have not taken their child to an optometrist appear to have less understanding of optometry's scope of practice, are more likely to believe that a vision screening is a substitute for a full vision examination, and are more likely to take their child with strabismus to a family doctor. The discussion of whether vision screening or full vision examination is optimal is outside the scope of this paper. Suffice it to say that for vision screening to be effective, more than a measure of visual acuity is required. For reasonable sensitivity and specificity (85%), an accurate measure of monocular visual acuity, refractive error, ocular alignment (cover test), and stereopsis is needed.[29] For optimal sensitivity and specificity (95%), a modified clinical technique is required, which almost comprises a full eye examination. Regarding the difference in opinions among parents - there are many potential reasons for these differences. It is possible that parents who took their child for an eye examination were educated by the experience of an eye examination either indirectly and/or directly by the optometrist, or parents who understood the role of optometry were more likely to take their child for an eye exam. The present results cannot distinguish between these alternatives.

The age at which parents would take their child for his/her first examination if no problems were noticed also yielded significantly different results between the two groups. Parents who had taken their child to an optometrist would most likely take their child between the ages of two and four for his/her first eye examination, while parents who had never taken their child to an optometrist were more likely to take their child between the ages of six and ten. While results between these two groups differ, it appears that overall parents are unaware that vision exams should begin at six months of age and not be delayed until just before a child begins school. There appears to be a common misconception that visual efficiency development (accommodation, vergence, and oculomotor) begins at age three or four, while in fact rapid visual development occurs within the first six months of life. Again lack of consensus across the provincial associations may play a factor in this misconception. For example, the Nova Scotia Association of Optometrists, states "all children [should] receive a comprehensive eye examination by the age of three, and as early as 6 months if anything unusual is noticed"[30]. However, conditions such as amblyopia, congenital cataracts, and high refractive errors cannot be observed by the naked eye and a trained professional is required to detect these underlying conditions. Conversely, for the last 12 years the CAO has recommended all children receive regular, professional eye care beginning at six months of age. Reasons for the parents failure to take their child for a vision exam at six months, including where parents are most likely to obtain their information, are uncertain. Future research needs to investigate whether this failure is due to lack of parent education, lack of optometric consensus, and/or optometrists' lack of training or lack of confidence in paediatric optometry. In addition, provincial and national efforts must be implemented to inform the public about the importance of early eye care and the current limitations of vision screenings.

Conclusion

Despite previous reports that show the lack of vision care in children, our study found that most parents do take their child age six years or under for a vision examination even when no problems are noticed. These figures are higher than previous reports. The majority of parents surveyed felt their child should receive his/her first eye examination before starting school. Whether increased access to optometric care or higher education played a factor for increased vision awareness is unknown. However, few parents took their child by the age of 6 months, as recommended by the CAO and OAO. This was an interesting finding, considering most parents surveyed had already taken their child for an eye exam and may have been informed of the CAO/OAO recommended age of six months by their local optometrist. Future research should be conducted to determine whether it is poor parent compliance or poor optometric education (to parents) that is the reason for delayed

vision care in children.

Overall, parents are well aware of the link between vision and learning and the role of an optometrist. Parents understand the need for regular vision examinations, and are well educated regarding the role optometry plays in the visual development of a child. Again, the roots of the misconception that vision and learning begins at the age of three rather than at birth should be investigated further.

Acknowledgements

We give our thanks to the parents of the Upper Grand District School Board, the Kitchener-Waterloo Skating Club, and the Waterloo-Minor Hockey Association for participating in our study. Thank you also to Dr Marlee Spafford, OD, PhD for comments on the questionnaire. In addition, thank you to Mr. Nick Christian and Mr. Paul Christian for helping distribute the questionnaire. This study was supported by a COETF grant.

References on page 38.

Sensibiliser les parents aux soins de la vue chez les enfants de quatre à six ans

Résumé: Des études ont révélé que moins de 15 % des enfants se font examiner la vue avant l'âge de six ans. Cette lacune au niveau des soins de la vue peut s'expliquer en partie par le faible niveau de scolarité des parents. Nous avons fait une enquête par questionnaire auprès de parents d'enfants de quatre à six ans pour évaluer leur sensibilisation aux soins de la vue chez l'enfant. Les résultats indiquent que la plupart des parents (73 %) avaient fait examiner la vue de leur enfant avant six ans, mais que peu (5 %) le faisaient à l'âge de six mois (comme le recommande l'ACO). Les parents sont donc très sensibilisés à l'importance de la vision oculaire, mais le travail d'éducation doit se poursuivre si l'on désire augmenter le pourcentage d'enfants qui font l'objet d'un examen de la vue à un âge plus précoce.

Introduction

Les troubles de la vision sont fréquents chez la population pédiatrique au Canada, touchant 25 % des enfants de 0 à 18 ans[1,2]. Il a été prouvé que plus le diagnostic et le traitement d'un problème visuel survenaient tôt, moins grande était son incidence négative sur le développement de l'enfant. La recherche et l'expérience cliniques ont révélé qu'à l'âge de six mois, l'enfant d'intelligence moyenne atteint un nombre de jalons critiques, ce qui en fait un âge approprié pour le premier examen oculo-visuel[3]. À cet âge, un enfant d'intelligence moyenne peut saisir un jouet avec une main, se mettre debout avec un appui et prendre conscience de son environnement immédiat[4]. L'acuité visuelle (potentiel évoqué visuel – PEV), les habiletés oculo-motrices (saccades, poursuites, fixation), la vision binoculaire (alignement, proximum de convergence, stéréopsie) et l'accommodation (précision) se développent toutes rapidement dès la naissance, plusieurs de ces fonctions atteignant presque leur maturité dès l'âge de six mois[5].

À six mois, on peut dépister des manifestations de strabisme, d'erreur de réfraction élevée et d'anisométropie. Même si le traitement varie selon la gravité, toute intervention clinique indiquée devrait être faite le plus tôt possible. Les chances de réussite sont encore meilleures lorsque l'état est diagnostiqué et traité entre zéro et un an. Un retard dans le traitement peut entraîner une perte de l'interaction binoculaire ou du développement de l'acuité visuelle et aussi entraver le développement social, cognitif et perceptif futur[6].

Malgré des études démontrant la prévalence des troubles oculo-visuels chez les enfants, seulement 5 % des enfants de 0 à 4 ans reçoivent un examen complet de la vue[7]. Nous ne savons pas avec certitude pourquoi il en est ainsi. C'est peut-être parce que les parents se fient aux optométristes ou aux médecins de premiers recours pour être informés de l'âge approprié auquel leur enfant devrait recevoir un examen oculo-visuel complet, ou parce que les parents ne connaissent pas suffisamment l'importance d'un examen de la vue précoce pour prévenir une perte de vision inutile et favoriser le développement visuel.

Afin de comprendre les obstacles et les raisons qui expliquent pourquoi la majorité des jeunes enfants ne reçoivent pas de soins oculo-visuels, nous avons examiné l'attitude des parents à l'égard des soins de la vue chez les enfants. Au moyen d'une enquête, nous avons interrogé des parents d'enfants de quatre à six ans

Appendix A

DEFINITIONS

optometrist: *Doctor of optometry (OD) specializing in vision problems, treating vision conditions with spectacles, contact lenses, low vision aids and vision therapy*

vision examination: *eye and vision examinations completed by an optometrist or ophthalmologist*

vision screening: *not a full eye examination; often performed in a school or health fair by a qualified eye care professional or trained assistants; used to help identify children at risk for vision problems*

ophthalmologist: *Physician (MD) specializing in diagnosis and treatment of medical and surgical problems related to eye diseases and disorders.*

optician: *professional who makes and adjusts optical aids, (e.g., eyeglass lenses) from glasses prescribed by an ophthalmologist or optometrist*

Age of Participant (your age, NOT your child's age): _____ (years)
Participant: ☐ Male ☐ Female

Section A: Vision Care in Children

Please answer the following questions regarding your child age six years or under. If you have more than one child under the age of six, please answer the questions pertaining to your child who is closest to age six.

1. Has your child ever had his/her eyes examined?
   ☐ yes ☐ no – if no, please go to question # 8

2. Where did your child have his/her first eye examination?
   ☐ optometrist office – if your child went to an optometrist, please go to question #4
   ☐ ophthalmologist office
   ☐ family doctor's office or pediatrician's office
   ☐ school
   ☐ community health fair
   ☐ other - please explain: ...

3. Has your child ever had his/her eyes examined by an optometrist?
   ☐ yes ☐ no – if no, please go to question #9

4. How old was your child when s/he went to the optometrist for the first time?
   ☐ less than one year old ☐ 1 year old
   ☐ 2 years old ☐ 3 years old
   ☐ 4 years old ☐ 5 years old
   ☐ 6 years old

5. What was the ***main reason*** for your child's initial eye examination by an optometrist? (*please check one*)
   ☐ I noticed a vision or eye problem.
   ☐ I didn't notice a vision or eye problem but felt my child should get his/her eyes examined.
   ☐ An eye examination was recommended by family doctor or pediatrician
   ☐ An eye examination was recommended by a school vision screening
   ☐ An eye examination was recommended by a community vision screening
   ☐ There is a family history of a vision or eye problem
   ☐ My child indicated a vision or eye problem
   ☐ other reason - please explain: ...

6. What was the outcome of the eye examination? (*check all that apply*)
   ☐ No treatment was needed
   ☐ My child needed glasses or contact lenses
   ☐ A vision disease or abnormality was detected – please explain: ...
   ☐ My child was referred to an ophthalmologist
   ☐ Other outcome – *please explain:* ...

7. After your child's initial eye examination, how often has your child seen the optometrist?
   ☐ every six months ☐ every year
   ☐ every other year ☐ only when a problem is noticed
   ☐ not applicable* *please go to Section B*

8. What is the reason your child has never had his/her eyes examined?
   ☐ No vision or eye problems noted
   ☐ Child seems too young to be examined
   ☐ No vision screening programs or vision examinations available in my community
   ☐ Cost (e.g. of exam, transportation, spectacles)
   ☐ Other: please explain ... * *please go to Section B*

9. What is the reason you have not taken your child to an optometrist?
   ☐ No vision or eye problems noted
   ☐ Examined by family doctor or paediatrician
   ☐ Not sure what an optometrist does
   ☐ Passed vision screening exam
   ☐ Cost (exam, spectacles, transportation, etc)
   ☐ Other: please explain ...

Section B: Vision and Learning

Please answer the following questions the best you can: In this section we are interested in your opinion rather than testing your knowledge.

10. In your opinion, what percentage of children have a vision problem that can impact learning and development? (*please pick the closest or best answer*)
    ☐ less than 1% ☐ 1-5% ☐ 5-10%
    ☐ 10-15% ☐ 15-20% ☐ 25%

11. From birth to age twelve years, what percentage of learning do you believe is through vision? (*please pick the closest or best answer*)
    ☐ 20% ☐ 40% ☐ 60% ☐ 80% ☐ 100%

12. In your opinion, what percentage of children with learning disabilities (e.g. attention deficit disorder or dyslexia) also have undetected vision problems? (*please pick the closest or best answer*)
    ☐ 20% ☐ 40% ☐ 60% ☐ 80% ☐ 100%

13. In your opinion, at what age should conditions such as a lazy eye (amblyopia) be treated?
    ☐ birth – 6 years old ☐ 6 –10 years old
    ☐10-15 years old ☐ no age requirement

14. Is the cost of an eye examination covered by OHIP (for children 19 years and under)?
    ☐ yes ☐ no ☐ don't know

15. Imagine that your child recently passed a school vision screening; do you believe that child would still require a full eye examination by an optometrist?
    ☐ yes ☐ no ☐ don't know

16. Imagine your child passed a vision screening at the local health fair; do you think your child could still have an undetected vision or eye problem?
    ☐ yes ☐ no ☐ don't know

17. Imagine that you notice your child's right eye turns outward when looking straight ahead. Where would you take your child to get an eye examination? (*please choose one answer*)
    ☐ family doctor's office or paediatrician's office
    ☐ optometrist's office
    ☐ ophthalmologist's office
    ☐ emergency room
    ☐ don't know
    ☐ other: please explain ...

18. Assuming you have not noticed any vision or eye problems in your child; at what age would you take your child for his/her first eye examination? (*please choose one answer*)
    ☐ six months ☐ 1 year
    ☐ 2-4 years ☐ 4-6 years
    ☐ 6-10 years ☐ whenever the child reports they are having problems seeing well

END OF QUESTIONNAIRE – THANK YOU FOR PARTICIPATING!!

pour déterminer les soins de la vue que recevaient leurs enfants et savoir ce qu'ils pensaient du rôle de la vision dans le processus d'apprentissage.

Méthodes

On a demandé aux parents résidant dans les villes ontariennes de Kitchener-Waterloo et Guelph, dont les enfants étaient âgés de quatre à six ans, de répondre à un questionnaire écrit. L'échantillon de Waterloo a été prélevé au hasard auprès de parents dont l'enfant était membre de l'association du hockey mineur de Waterloo et du club de patineurs de Kitchener-Waterloo. L'échantillon de Guelph a été tiré auprès des parents dont les enfants fréquentaient le Conseil scolaire Upper Grand District. Cinq cent quatre-vingt-cinq participants ont reçu le questionnaire, soit 180 à Kitchener-Waterloo et 405 à Guelph.

L'enquête portait sur la sensibilisation des parents à l'égard des soins de la vue chez les enfants âgés de quatre à six ans (voir annexe 1). L'enquête était divisée en deux parties : la première partie demandait aux parents de répondre à des questions sur les soins de la vue relativement à leur enfant âgé de six ans ou moins. Si les parents avaient plus d'un enfant âgé de six ans ou moins, ils devaient répondre aux questions en fonction de l'enfant le plus près de six ans. Dans la deuxième partie, on demandait aux parents leur opinion sur le rôle que joue la vision dans le processus d'apprentissage. La recherche a été approuvée par le Bureau d'éthique de la recherche à l'Université de Waterloo.

Résultats

Cent quatorze personnes (63 %) de Kitchener-Waterloo et 232 personnes (57 %) de Guelph ont répondu à l'enquête. Les participants, âgés de 21 à 61 ans, comprenaient 252 femmes et 94 hommes.

La majorité des parents ont indiqué que leur enfant avait reçu un examen de la vue avant l'âge de six ans (76 % à Kitchener-Waterloo, 71 % à Guelph). De ce groupe, 61 % à Kitchener-Waterloo et 59 % à Guelph avaient amené leur enfant chez un optométriste pour son premier examen de la vue. Il n'y avait pas de différence significative dans la distribution entre Kitchener-Waterloo et Guelph (test chi carré, p = 0,732).

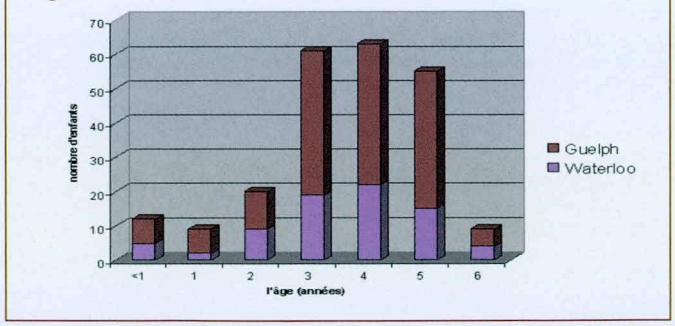
La figure 1 présente la distribution de l'âge auquel l'enfant a reçu son premier examen de la vue. La majorité des parents (28 %) ont amené leur enfant chez un optométriste pour son premier examen de la vue à l'âge de quatre ans. Ici encore, il n'y a pas eu de différence significative dans la distribution entre Kitchener-Waterloo et Guelph (test de Kolmogorov-Smirnov, p = 0,516). Comme les résultats de Guelph et de Kitchener-Waterloo étaient similaires sur ces aspects, ils ont été combinés pour la suite de l'analyse.

La figure 2 indique les raisons pour lesquelles leur enfant a reçu un examen de la vue. Même si la plupart des participants (61 %) ont dit n'avoir remarqué aucun problème oculo-visuel chez leur enfant, ils ont jugé bon de faire examiner la vue de leur enfant et désiraient aussi le faire avant que leur enfant entreprenne sa première année d'école. Parmi les participants dont l'enfant n'avait pas reçu un examen de la vue par un optométriste, 78 % ont donné comme raison que ni l'enfant ni le parent n'avait décelé de problème oculo-visuel.

Pour analyser les résultats de la deuxième partie du questionnaire, les participants ont été divisés en trois groupes selon que leur enfant avait reçu ou non des soins de la vue. Le groupe 1 représentait les enfants qui avaient été examinés par un optométriste; le groupe 2, les enfants qui n'avaient reçu aucun type d'examen de la vue ou de dépistage de problèmes visuels; et le groupe 3, les enfants ayant reçu un dépistage de problèmes visuels mais n'ayant pas été vus par un optométriste ou un ophtalmologiste. On a comparé les groupes selon l'opinion des parents sur la vision et l'apprentissage en fonction des soins de la vue couramment dispensés aux enfants.

Il n'y a pas eu de différence statistique significative dans la façon de répondre à la question sur le

Figure 1



Histogramme de l'âge de l'enfant à son premier examen de la vue effectué par un optométriste

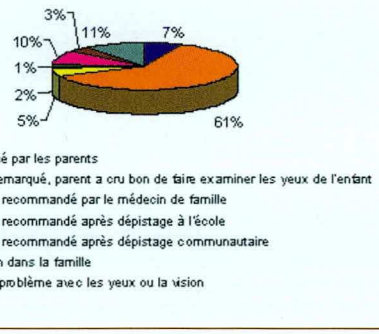
pourcentage d'apprentissage attribuable à la vision (test de Kolmogorov-Smirnov, groupes 1 et 2, p = 0,820, groupes 1 et 3, p = 0,320, groupes 2 et 3, p = 0,320). La majorité des répondants (52 %) étaient d'avis que l'apprentissage survient à 80 % grâce à la vision. Mais on a répondu de façon plus diversifiée à la question de contrôle (quel pourcentage des enfants avec une déficience d'apprentissage, selon eux, ont aussi des problèmes oculo-visuels non diagnostiqués). Encore une fois, il n'y a pas eu de différence significative entre les groupes (test de Kolmogorov-Smirnov, groupes 1 et 2, p = 0320, groupes 1 et 3, p = 0,080, groupes 2 et 3, p = 0,320). La figure 3 illustre les résultats combinés.

On a présenté aux participants des scénarios hypothétiques afin d'évaluer leurs connaissances de la différence entre les dépistages et les examens de la vue. On a exposé deux cas similaires. Dans le premier cas, on demandait aux parents s'ils croyaient que leur enfant devrait recevoir un examen visuel complet par un optométriste s'il avait déjà reçu récemment un dépistage de problèmes visuels à l'école. Même si la majorité des enquêtés ont répondu « oui » (80 % pour les trois groupes), il y a eu une différence significative entre les groupes 1 et 2, et les groupes 1 et 3 (test chi carré; groupes 1 et 2, p = 0,004, groupes 1 et 3, p = < 0,001). Toutefois, il n'y a pas eu de différence entre les groupes 2 et 3 (test chi carré, p = 0,679). Dans le deuxième cas, on a demandé aux participants s'ils croyaient que leur enfant pouvait encore avoir un problème oculo-visuel non décelé s'il avait reçu récemment un dépistage de problèmes visuels à une foire locale sur la santé. Encore une fois, même si la majorité des enquêtés ont répondu « oui » (83 % pour les trois groupes), il y a eu une différence significative entre les groupes 1 et 2, et les groupes 1 et 3 (test chi carré; groupes 1 et 2, p = < 0,001, groupes 1 et 3, p = 0,003), mais aucune différence entre les groupes 2 et 3 (test chi carré, p = 0,128). À partir de ces résultats, il semble que les parents dont l'enfant a été examiné par un optométriste se fient moins aux résultats des dépistages de problèmes visuels si on les compare aux parents dont l'enfant n'a reçu aucun examen complet de la vue.

Un autre cas présentait un enfant avec une exotropie à l'œil droit en fixation primaire. On a demandé aux parents à qui ils confieraient l'examen de leur enfant s'ils remarquaient ce problème oculaire. Soixante-dix-huit pour cent des participants du groupe 1 amèneraient leur enfant chez un optométriste. Les répondants du groupe 2 se partageaient entre un médecin de famille (43 %) et un optométriste (43 %). La majorité des participants du groupe 3 amèneraient leur enfant au bureau du médecin de famille ou du pédiatre pour un examen de la vue (52 %). Encore une fois, il y a eu une différence significative entre les parents qui avaient déjà amené leur enfant chez un optométriste par rapport aux parents qui ne l'avaient jamais fait; les premiers étaient plus enclins à demander l'avis d'un optométriste plutôt que celui d'un médecin de famille (test chi carré; groupes 1 et 2, p = < 0,001, groupes 1 et 3, p = < 0,001). La figure 4 indique les taux de réponse pour les trois groupes.

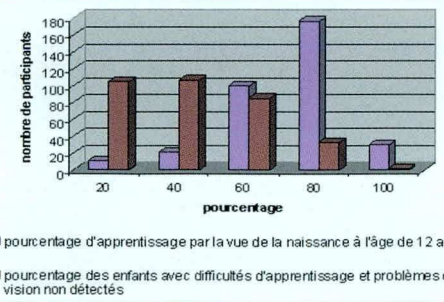
La dernière question de l'enquête demandait aux parents à quel âge ils amèneraient leur enfant à son premier examen de la vue, en présumant qu'aucun problème oculo-visuel n'était décelé. Bien que la majorité des participants du groupe 1 indiquent que ce serait entre l'âge de 2 ans et 4 ans (52 %), les parents

Figure 2



Raisons motivant un premier examen de la vue d'un enfant par un optométiste

Figure 3



Histogramme du pourcentage d'apprentissage acquis à travers la vision et le pourcentage d'enfants avec difficultés d'apprentissage ayant des problèmes de vision non détectés selon la réponse des parents

du groupe 2 ont précisé que ce serait entre l'âge de 6 ans et 10 ans (40 %), tandis que ceux du groupe 3 se partageaient de façon égale entre l'âge de 4 ans et 6 ans (25 %), 6 ans et 10 ans (25 %) et lorsque l'enfant signalerait des problèmes de vision (25 %). Il y a eu encore une différence significative entre les parents dont les enfants avaient vu ou non un optométriste (test chi carré; groupes 1 et 2, p = < 0,001, groupes 1 et 3, p = < 0,001), mais aucune différence entre les parents dont l'enfant n'avait jamais reçu de soins de la vue et les parents dont l'enfant avait eu un dépistage de problèmes visuels (test chi carré, p = 0,064). La figure 5 indique l'âge auquel chaque groupe amènerait son enfant à un examen de la vue.

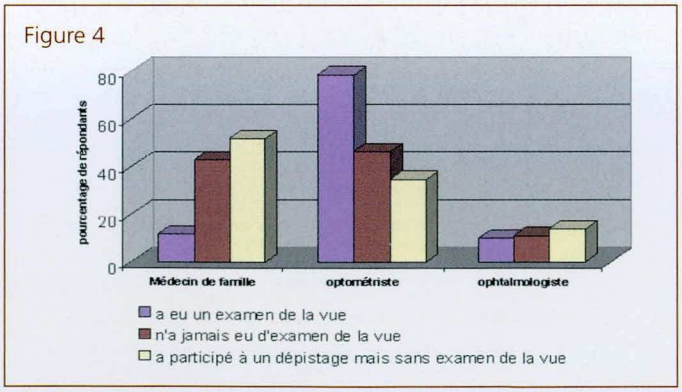
Discussion

Soins de la vue

Certains aspects des résultats rapportés ici sont encourageants. Par exemple, 73 % de tous les parents indiquent que leur enfant a reçu un examen de la vue avant six ans. Ce nombre est plutôt surprenant puisque la plupart des études et des articles révèlent un pourcentage beaucoup plus faible. Par exemple, le Vision Service Plan's : Children's Vision Awareness Study (avril 2002) signale que 52 % des parents visés par l'enquête avaient amène leur enfant chez un spécialiste des soins oculo-visuels (optométriste ou ophtalmologiste) au plus tard à 12 ans[8]. L'Association canadienne des optométristes (ACO) et l'American Association of Optometrists (AAO) estiment toutes deux que seulement 14 % des enfants de 6 ans et moins reçoivent des soins oculo-visuels d'un optométriste[9,10]. De plus, selon les données du Régime de l'assurance-maladie de l'Ontario (RAMO) pour l'exercice 2001-2002, seulement 5 % des enfants admissibles âgés de 0 à 4 ans ont reçu un examen complet de la vue[11]. Une raison expliquant le nombre accru d'enfants ayant fait l'objet d'un examen de la vue dans notre population tient peut-être au lieu où l'étude a été menée. Même si nous avons tout fait pour prélever un échantillon au hasard, trois des 20 universités de l'Ontario sont à Kitchener-Waterloo et Guelph. La seule école d'optométrie canadienne de langue anglaise est située dans l'une de ces villes, ce qui peut être un facteur, bien qu'il n'y ait aucune différence entre Kitchener-Waterloo et Guelph dans notre échantillon. Même si nous ne pouvons affirmer avec certitude que le niveau de scolarité joue un rôle dans la sensibilisation accrue à l'égard des soins de la vue chez l'enfant, il faudrait peut-être tirer un échantillon plus aléatoire dans l'ensemble de la province pour vérifier l'applicabilité plus générale de nos résultats.

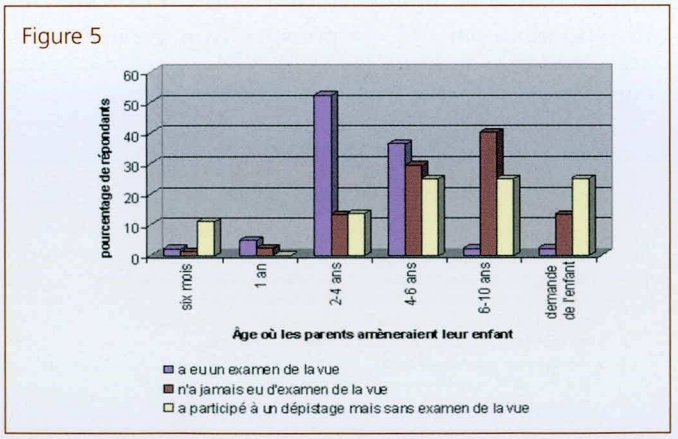
Autre statistique encourageante: 61 % des enfants avaient reçu un examen de la vue même si aucun problème n'avait été décelé. Encore ici, ce nombre est plus élevé que ce que révélaient des études antérieures – le Vision Service Plan's: Children's Vision Awareness Study (avril 2002) indiquait que 23 % des parents visés par l'enquête avaient l'impression que leur enfant avait besoin d'un examen de la vue[12]. Même si le niveau de scolarité joue un rôle dans la sensibilisation accrue à l'égard des soins de la vue chez les enfants, la disponibilité des soins optométriques pourrait aussi être un autre

Figure 4



Histogramme du choix du premier professionnel où le parent amènerait son enfant si une déviation de strabisme était remarquée. Les données sont divisées selon ceux qui ont déjà amené leur enfant pour un examen de la vue et ceux qui ne l'ont pas fait.

Figure 5



L'Âge où les parents amèneraient leur enfant pour leur premier examen de la vue si aucun problème était noté

facteur. Si l'on tient compte du nombre d'optométristes inscrits à l'Ordre des optométristes de l'Ontario en mai 2005, 8,8 % des optométristes inscrits pratiquaient dans la ville de Waterloo (population : 86 543). En comparaison, seulement 1,4 % des optométristes inscrits pratiquaient à Whitby (Ont.), une ville ayant sensiblement la même taille de population (87 413 habitants)[13]. Un pourcentage plus élevé d'optométristes dans une ville sensibiliserait sans doute le public à la nécessité d'examens réguliers de la vue.

La plupart des provinces publient des lignes directrices concernant le premier examen oculo-visuel de l'enfant. Ces lignes directrices cliniques sur les soins oculo-visuels varient partout au pays. L'ACO et l'Association des optométristes de l'Ontario (AOO) recommandent qu'un enfant reçoive son premier examen de la vue à l'âge de six mois[14,15]. Les résultats de notre étude correspondent aux études antérieures sur ce point – seulement 5 % des parents ont fait subir un examen de la vue à leur enfant à l'âge de six mois, comme le recommande l'ACO. Selon nos résultats, il semble que les parents soient conscients de la nécessité d'un examen de la vue avant l'entrée à l'école mais non pas de la nécessité d'un examen à l'âge de six mois. Toutefois, des provinces comme la Colombie-Britannique, le Nouveau-Brunswick et Terre-Neuve recommandent de faire subir aux enfants un examen de la vue au plus tard à 3 ans[16,17,18]. L'absence de consensus entre les associations optométriques au pays n'envoie pas une information uniforme au public et aux optométristes eux-mêmes. Selon notre étude, même si de nombreux parents ont fait examiner la vue de leur enfant, 54 % des parents l'ont fait lorsque l'enfant était âgé de trois à cinq ans. Toutefois, des changements rapides surviennent dans la plupart des composantes du système visuel (acuité visuelle, accommodation, vision binoculaire) durant les six premiers mois de vie[19]. Une entrave au développement pendant cette phase très critique peut avoir de graves conséquences permanentes sur la vision. Le traitement réussi d'un problème oculo-visuel repose en grande partie sur une intervention précoce. Les problèmes oculo-visuels peuvent avoir une incidence significative sur l'apprentissage durant les années de formation (c.-à-d. préscolaires) et les années scolaires[20]. Par exemple, des études ont révélé les effets négatifs de l'amblyopie sur le rendement scolaire[21]. Un diagnostic et une prise en charge précoces peuvent donc favoriser un meilleur traitement et moins de difficultés à l'école. Malheureusement, les gens croient faussement qu'on peut « voir » les troubles oculo-visuels congénitaux ou de la petite enfance. Une étude a démontré que des enfants dont l'amblyopie a été diagnostiquée à la première année d'école couraient plus de risque d'avoir un strabisme à petit angle ou une anisométropie – deux états qui ne peuvent souvent être décelés à l'observation seulement[22]. L'hypéropie non corrigée peut aussi nuire au développement cognitif et à l'apprentissage, pourtant on ne peut la déceler à l'observation et elle peut demeurer cachée aux dépistages de problèmes visuels[23,24].

Vision et apprentissage

En général, la plupart des parents visés par l'enquête percevaient la vision comme un facteur important du processus d'apprentissage, admettant ainsi l'existence de rapports entre les problèmes oculo-visuels et les difficultés d'apprentissage. Étonnamment, cette attitude n'a pas été différente chez les parents dont l'enfant avait reçu ou non un examen de la vue entre 0 et 6 ans. La majorité des parents dont l'enfant n'avait pas été examiné par un optométriste croyaient aussi que la vision jouait un rôle important dans le rendement scolaire. Les parents semblaient comprendre que même si les problèmes oculo-visuels ne sont pas généralement les seules causes des troubles d'apprentissage, un pourcentage assez élevé d'enfants ayant des difficultés d'apprentissage peuvent avoir un problème oculo-visuel. Des statistiques aux États-Unis révèlent que 25 % des enfants d'âge scolaire ont des problèmes oculo-visuels non diagnostiqués[25]. L'étude d'Hoffman a confirmé cette statistique après avoir comparé des enfants avec et sans problèmes d'apprentissage, et a conclu que les premiers présentaient une incidence plus élevée de problèmes liés à la vision[26]. Dans une méta-analyse, Simons et Gassler (1988) ont conclu que l'hypéropie, l'exophorie de près, les phories verticales et l'anisométropie sont clairement reliées à la capacité de lire[27]. Une étude récente a révélé que les enfants avec une hypéropie non corrigée accusent un retard dans la première alphabétisation[28].

Lorsqu'on compare les opinions de parents dont l'enfant a vu ou non un optométriste, les résultats en ce qui concerne le traitement et la prise en charge d'un enfant avec un problème hypothétique sont très

différents. Selon notre enquête, les parents dont l'enfant a vu un optométriste semblent moins enclins à se fier aux résultats d'un dépistage de problèmes visuels et semblent également mieux connaître le rôle d'un optométriste. Les parents dont l'enfant n'a pas vu un optométriste semblent moins comprendre l'étendue de la pratique optométrique, sont plus portés à croire qu'un dépistage de problèmes visuels remplace un examen complet de la vue, et sont plus enclins à consulter un médecin de famille pour le strabisme de leur enfant. Quant à savoir lequel du dépistage de problèmes visuels ou de l'examen complet de la vue est le meilleur n'entrait pas dans le champ de notre étude. Il suffit de dire qu'un dépistage visuel efficace exige plus qu'une simple évaluation de l'acuité visuelle. Pour une évaluation raisonnable de la sensibilité et de la spécificité (85 %), il faut mesurer avec exactitude l'acuité visuelle monoculaire, l'erreur de réfraction, l'alignement oculaire (test de l'écran) et la stéréopsie[29]. Une évaluation optimale de la sensibilité et de la spécificité (95 %) doit reposer sur une technique clinique modifiée d'un examen complet de la vue. De nombreuses raisons peuvent expliquer les divergences d'opinion entre les parents. Des parents ont pu avoir été informés indirectement ou directement par l'optométriste qui a examiné leur enfant, ou encore, les parents qui comprenaient le rôle de l'optométrie ont eu plus tendance à faire subir un examen de la vue à leur enfant. Les résultats actuels ne permettent pas de faire de distinction entre ces deux possibilités.

L'âge auquel l'enfant a reçu son premier examen si les parents n'avaient décelé aucun problème a aussi été très différent entre les deux groupes. Les parents dont l'enfant avait vu l'optométriste étaient probablement plus enclins à l'amener chez l'optométriste entre deux et quatre ans, tandis que les parents dont l'enfant n'avait pas vu l'optométriste étaient plus portés à l'y amener entre six et dix ans. Même si les résultats entre ces deux groupes sont différents, les parents, dans l'ensemble, ne semblaient pas savoir que les examens de la vue devaient commencer à l'âge de six mois et non pas être repoussés juste avant la première année d'école. On semble croire faussement que le développement de l'efficacité visuelle (accommodation, vergence et mouvements oculo-moteurs) commence à l'âge de trois ou quatre ans, alors qu'un développement visuel rapide survient effectivement dans les six premiers mois de vie. Encore une fois, l'absence de consensus entre les associations provinciales peut contribuer en partie à cette fausse idée. Par exemple, l'Association des optométristes de la Nouvelle-Écosse affirme que tous les enfants devraient recevoir un examen complet de la vue avant l'âge de trois ans, et dès l'âge de six mois en cas d'anomalie[30]. Toutefois, des problèmes tels que l'amblyopie, les cataractes congénitales et les erreurs de réfraction élevées ne peuvent être observés à l'œil nu et nécessitent donc l'intervention d'un professionnel. De son côté, l'ACO recommande depuis 12 ans que tous les enfants reçoivent des soins réguliers de la vue d'un professionnel dès l'âge de six mois. On ne peut préciser les raisons pour lesquelles les parents ne font pas subir à leur enfant un examen de la vue dès l'âge de six mois, ni l'endroit où les parents sont le plus susceptibles d'obtenir cette information. Des études devront chercher à savoir si cette attitude des parents est due à un manque d'information des parents, à une absence de consensus optométrique, ou à une formation déficiente des optométristes ou à un manque de confiance dans l'optométrie pédiatrique. De plus, on doit déployer plus d'efforts aux échelons national et provincial pour informer le public de l'importance des soins oculo-visuels précoces et des limites actuelles des dépistages oculo-visuels.

Conclusion

Malgré des rapports indiquant une lacune dans les soins de la vue chez les enfants, notre étude a constaté que la plupart des parents faisaient subir un examen de la vue à leur enfant au plus tard à six ans même lorsqu'aucun problème n'était détecté. Ces chiffres sont plus élevés que ceux des rapports antérieurs. La majorité des parents enquêtés étaient d'avis que leur enfant devait recevoir son premier examen de la vue avant la première année d'école. On ne sait trop si cette sensibilisation accrue à l'égard des soins de la vue s'explique par un plus grand accès aux soins optométriques ou par une éducation plus poussée. Toutefois, peu d'enfants ont reçu un examen de la vue dès l'âge de six mois comme le recommandent l'ACO et l'AOO. Cette conclusion est intéressante lorsqu'on sait que la plupart des parents visés par l'enquête avaient déjà amené leur enfant chez

Annexe A

DÉFINITIONS

Optométriste: *docteur en optométrie (OD) spécialisé dans les problèmes oculo-visuels et le traitement des maladies visuelles par des lunettes, des lentilles cornéennes, des aides à la basse vision et une thérapie visuelle.*

Examen de la vue: *examens oculo-visuels complets par un optométriste ou un ophtalmologiste.*

Dépistage des problèmes visuels: *n'est pas un examen complet de la vue; souvent effectué dans une école ou une foire de la santé par un professionnel des soins oculaires agréé ou par des assistants formés; sert à identifier les enfants qui risquent d'avoir des problèmes visuels.*

Ophtalmologiste: *médecin (MD) spécialisé dans le diagnostic et le traitement de problèmes médicaux et chirurgicaux liés aux maladies et aux problèmes du système visuel.*

Opticien: *professionnel qui fabrique et ajuste des aides optiques, (p. ex., lunettes, lentilles) à partir de la prescription d'un ophtalmologiste ou d'un optométriste.*

Âge du participant (votre âge, NON l'âge de votre enfant): __ (ans)
Participant : ☐ Homme ☐ Femme

Section A: Soins de la vue chez les enfants
Veuillez répondre aux questions suivantes pour votre enfant de six ans ou moins. Si vous avez plus d'un enfant de moins de six ans, veuillez répondre pour l'enfant le plus près de six ans.

1. Votre enfant a-t-il déjà eu un examen de la vue?
   ☐ oui ☐ non – dans ce cas, veuillez passer à la question no 8

2. À quel endroit votre enfant a-t-il eu son premier examen de la vue?
   ☐ bureau d'un optométriste – si votre enfant a vu un optométriste, veuillez passer à la question no 4
   ☐ bureau d'un ophtalmologiste
   ☐ bureau d'un médecin de famille ou d'un pédiatre
   ☐ école
   ☐ foire locale sur la santé
   ☐ autre – veuillez expliquer : …

3. Votre enfant a-t-il déjà reçu un examen de la vue chez un optométriste?
   ☐ oui ☐ non – dans ce cas, veuillez passer à la question no 9

4. Quel âge avait votre enfant lors de sa première visite chez l'optométriste?
   ☐ moins de un an ☐ 1 an ☐ 2 ans ☐ 3 ans
   ☐ 4 ans ☐ 5 ans ☐ 6 ans

5. Quelle est la raison principale justifiant le premier examen de la vue de votre enfant par un optométriste? (*veuillez cocher une case*)
   ☐ J'ai détecté un problème de la vision ou de l'œil
   ☐ Je n'avais détecté aucun problème de la vision ou de l'œil, mais j'avais l'impression que mon enfant devait se faire examiner la vue
   ☐ Un médecin de famille ou un pédiatre avait recommandé un examen de la vue
   ☐ Un examen de la vue avait été recommandé à la suite d'un dépistage des problèmes visuels à l'école
   ☐ Un examen de la vue avait été recommandé à la suite d'un dépistage des problèmes visuels dans la collectivité
   ☐ Il y a des antécédents familiaux de problèmes de la vision ou de l'œil
   ☐ Mon enfant m'a parlé d'un problème de la vision ou de l'œil
   ☐ Autre raison – veuillez expliquer : …

6. Quel a été le résultat de l'examen de la vue? (*cochez tout ce qui est pertinent*)
   ☐ Aucun traitement n'était nécessaire
   ☐ Mon enfant avait besoin de lunettes ou de lentilles cornéennes
   ☐ Une anomalie ou une maladie de la vue a été détectée – veuillez expliquer :
   ☐ On a dirigé mon enfant à un ophtalmologiste
   ☐ Autre résultat – veuillez expliquer : …

7. Après ce premier examen de la vue, à quelle fréquence votre enfant a-t-il revu l'optométriste?
   ☐ tous les six mois ☐ une fois l'an ☐ tous les deux ans
   ☐ lorsqu'il y avait un problème ☐ ne s'applique pas * veuillez passer à la section B

8. Pour quelle raison votre enfant n'a-t-il jamais eu un examen de la vue?
   ☐ Aucun problème de la vision ou de l'œil n'a été décelé
   ☐ L'enfant me semble trop jeune pour un examen
   ☐ Aucun programme de dépistage de problèmes visuels ou d'examen de la vue disponible dans ma collectivité
   ☐ Coût (p. ex., de l'examen, du transport, des lunettes)
   ☐ Autre : veuillez expliquer * veuillez passer à la section B

9. Pour quelle raison votre enfant n'a-t-il pas vu un optométriste?
   ☐ Aucun problème de la vision ou de l'œil n'a été décelé
   ☐ Il a été vu par un médecin de famille ou un pédiatre
   ☐ Je ne sais pas trop ce que fait un optométriste
   ☐ Avait subi un examen de dépistage des problèmes visuels
   ☐ Coût (de l'examen, des lunettes, du transport, etc.)
   ☐ Autre : veuillez expliquer

Section B : Vision et apprentissage
Veuillez répondre aux questions suivantes au mieux de votre connaissance : notre but est de connaître votre opinion et non pas d'évaluer vos connaissances.

10. Selon vous, quel pourcentage d'enfants ont un problème de la vue susceptible d'avoir une incidence négative sur l'apprentissage et le développement? (*veuillez choisir la meilleure réponse ou celle qui s'en rapproche le plus*)
    ☐ moins de 1 % ☐ 1 à 5 % ☐ 5 à 10 %
    ☐ 10 à 15 % ☐ 15 à 20 % ☐ 25 %

11. De la naissance à l'âge de 12 ans, quel pourcentage de l'apprentissage, selon vous, survient grâce à la vision? (*veuillez choisir la meilleure réponse ou celle qui s'en rapproche le plus*)
    ☐ 20 % ☐ 40 % ☐ 60 % ☐ 80 % ☐ 100 %

12. Selon vous, quel pourcentage des enfants ayant des troubles d'apprentissage (p. ex., troubles déficitaires de l'attention ou dyslexie) ont également des problèmes de la vue non détectés? (*veuillez choisir la meilleure réponse ou celle qui s'en rapproche le plus*)
    ☐ 20 % ☐ 40 % ☐ 60 % ☐ 80 % ☐ 100 %

13. Selon vous, à quel âge devrait-on traiter des états comme l'œil paresseux (amblyopie)?
    ☐ entre la naissance et 6 ans ☐ entre 6 et 10 ans
    ☐ entre 10 et 15 ans ☐ il n'y a pas d'âge

14. Le coût d'un examen de la vue est-il couvert par le RAMO (pour les enfants de 19 ans et moins)?
    ☐ oui ☐ non ☐ ne sais pas

15. Imaginez que votre enfant a subi récemment un dépistage des problèmes visuels à l'école; croyez-vous qu'il serait encore nécessaire qu'il fasse l'objet d'un examen complet de la vue par un optométriste?
    ☐ oui ☐ non ☐ ne sais pas

16. Imaginez que votre enfant a reçu un dépistage des problèmes visuels à une foire locale sur la santé; pensez-vous que votre enfant pourrait encore avoir un problème de la vision ou de l'œil qui n'a pas été détecté?
    ☐ oui ☐ non ☐ ne sais pas

17. Imaginez que l'œil droit de votre enfant se tourne vers l'extérieur lorsqu'il regarde droit devant lui. Où amèneriez-vous votre enfant pour un examen de la vue? (*veuillez choisir une réponse*)
    ☐ bureau du médecin de famille ou du pédiatre
    ☐ bureau de l'optométriste ☐ bureau de l'ophtalmologiste
    ☐ salle d'urgence ☐ ne sais pas
    ☐ autre : veuillez expliquer

18. Supposons que vous n'avez remarqué aucun problème de la vision ou de l'œil chez votre enfant; à quel âge devrait-il recevoir son premier examen de la vue? (veuillez choisir une réponse)
    ☐ six mois ☐ 1 an ☐ entre 2 et 4 ans ☐ entre 4 et 6 ans
    ☐ entre 6 et 10 ans ☐ lorsque l'enfant se plaint de problèmes de vision

FIN DU QUESTIONNAIRE – MERCI DE VOTRE PARTICIPATION!!

l'optométriste pour un examen de la vue et que celui-ci les avait peut-être informés de la recommandation de l'ACO/AOO. D'autres recherches permettraient de savoir si le retard à dispenser des soins de la vue aux enfants s'explique pas une négligence des parents ou par une information optométrique déficiente (aux parents).

Dans l'ensemble, les parents sont bien conscients du lien entre la vision et l'apprentissage et le rôle d'un optométriste. Les parents comprennent la nécessité d'examens de la vue réguliers et sont bien informés quant au rôle de l'optométrie dans le développement visuel d'un enfant. Encore une fois, il faudrait étudier davantage l'origine de la croyance fausse selon laquelle la vision et l'apprentissage se développent à l'âge de trois ans plutôt qu'à la naissance.

Remerciements

Nous remercions les parents du Conseil scolaire Upper Grand District, le club de patineurs de Kitchener-Waterloo et l'Association du hockey mineur de Waterloo de leur participation à notre étude. Nous remercions aussi la Dre Marlee Spafford, OD, Ph. D., pour ses commentaires sur le questionnaire. De plus, nous aimerions remercier M. Nick Christian et M. Paul Christian pour leur aide à la distribution du questionnaire. Cette étude a reçu une subvention du FFOCE.

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BREAKING news NEWS breaking

WE'RE SAD TO ANNOUNCE THE HONORABLE MINISTER OF HEALTH GEORGE ABBOTT IS LOSING HIS VISION

The responsibility and mandate of the Canadian Association of Optometrists, as well as that of government is to ensure that we protect the public interest. Any consideration of enhanced scope of practice must consider as its objective the public interest and not the commercial interest of a particular trade. The availability of "sight tests" separate from a complete eye examination would result in decreased preventive care and increased undetected pathology, at potentially significant public cost. Please find below the latest CAO news release regarding the proposed optician regulation in British Columbia. Members are encouraged to visit the CAO website, **www.opto.ca**, to find out more information and to **Take Action - Help the government with its vision!**

Canadian Optometrists Alarmed as B.C. Government Moves to Sanction Opticians to Prescribe Corrective Lenses

NEWS RELEASE
For Immediate Release

Ottawa - The Canadian Association of Optometrists (CAO) is calling for an urgent national dialogue on proposed regulations that would allow opticians in British Columbia to perform sight tests and prescribe corrective lenses. "This proposal is a radical departure from accepted eye care standards and is not in the public interest", said CAO President, Dr. Dorrie Morrow.

Dr. Morrow stated: "The government appears to be appeasing the economic interests of a small group of opticians and is proceeding with the change contrary to the advice from Medicine, Optometry and others in the eye care sector".

Currently, Canadian health regulations specify that a qualified doctor must be responsible for all optical prescriptions because a full eye examination is the only way to test for possible conditions such as cataracts, glaucoma or detached retinas, to name a few. This is critical because sight-testing equipment used by opticians cannot detect any of these serious health risks. Opticians are not doctors; rather their training is in the technical aspects of dispensing eyeglasses.

CAO takes exception to the view of the Honourable George Abbott, B.C. Minister of Health that there is no evidence that shows that automated sight testing is in any way harmful or inaccurate. According to CAO President, Dr. Morrow, "simply put, eye examinations should not be performed without an assessment of eye health, which results in the timely diagnosis of eye disease and ocular complications related to systemic disease such as diabetes. The evidence is undisputed".

"As President of the Canadian Association of Optometrists, I know that there are few things as precious as our eye health", added Dr. Morrow. "We need a collaborative process, rather than an arbitrary and confrontational approach.

The national Health Accord agreed to by the Premiers and Prime Minister established a 10-year plan that clearly committed to collaboration on primary health care. Eye health (in particular, "sight restoration") is identified as a critical national priority. It is premature and out of step with the federal-provincial agreement, which was signed by Premier Gordon Campbell, to proceed unilaterally with the BC-only sight testing initiative. It should be put on hold while scope of practice issues are addressed within the context of the Health Accord and the new 10-year agreement.

Dr. Morrow stated, "CAO is prepared to participate in a national review that could better rationalize eye care services, not only in British Columbia, but also throughout Canada". This review should commence as soon as possible and should be coordinated as part of the follow up to the historic provincial-federal agreement.

Pr Visudyne*
verteporfin for injection

PRESCRIBING INFORMATION (September 2004)

PrVisudyne* Verteporfin for Injection for Intravenous Use

PHOTOSENSITIZING AGENT FOR AGE-RELATED MACULAR DEGENERATION, PATHOLOGIC MYOPIA AND PRESUMED OCULAR HISTOPLASMOSIS

VISUDYNE* (verteporfin) is a drug to be used in Visudyne* Therapy. Visudyne* Therapy is a two-stage process requiring administration of both verteporfin for injection and nonthermal red light.

CAUTION: Visudyne* Therapy should only be used by physicians trained in the treatment of age-related macular degeneration and pathologic myopia using photodynamic therapy with verteporfin for injection and specified lasers. Following VISUDYNE* injection, residual photosensitivity for 48 hours or more may result in erythema and blistering of the skin when exposed to sunlight or brightly focused indoor light.

INDICATIONS AND CLINICAL USE Visudyne* Therapy is indicated for the treatment of age-related macular degeneration, pathologic myopia and presumed ocular histoplasmosis in patients with predominantly classic subfoveal choroidal neovascularization.

CONTRAINDICATIONS VISUDYNE* (verteporfin) is contraindicated for patients with porphyria or a known hypersensitivity to any component of this preparation, and in patients with severe hepatic impairment.

WARNINGS Following injection with VISUDYNE* (verteporfin), care should be taken to avoid exposure of skin or eyes to direct sunlight or bright indoor light for 2 days. In the event of extravasation during infusion, the extravasation area must be thoroughly protected from direct light until the swelling and discoloration have faded in order to prevent the occurrence of a local burn which could be severe. If emergency surgery is necessary within 48 hours after treatment, as much of the internal tissue as possible should be protected from intense light. Patients who experience severe decrease of vision of 4 lines or more within 1 week after treatment should not be retreated, at least until their vision completely recovers to pretreatment levels and the potential benefits and risks of subsequent treatment are carefully considered by the treating physician.

Caution should be exercised when Visudyne* Treatment under general anesthesia is considered (See PRECAUTIONS).

Use of incompatible lasers that do not provide the required characteristics of light for the photoactivation of VISUDYNE* could result in incomplete treatment due to partial photoactivation of VISUDYNE*, overtreatment due to overactivation of VISUDYNE*, or damage to surrounding normal tissue.

Pregnancy TERATOGENIC EFFECTS There are no adequate and well-controlled studies in pregnant women. VISUDYNE* should be used during pregnancy only if the benefit justifies the potential risk to the fetus. Rat fetuses of dams administered verteporfin for injection intravenously at ≥10 mg/kg/day during organogenesis (approximately 40-fold the human exposure at 6 mg/m^2 based on AUC_{inf} in female rats) exhibit an increase in the incidence of anophthalmia/microphthalmia. Rat fetuses of dams administered 25 mg/kg/day (approximately 125-fold the human exposure at 6 mg/m^2 based on AUC_{inf} in female rats) had an increased incidence of wavy ribs and fetal alterations. In pregnant rabbits, a decrease in body weight gain and food consumption was observed in animals that received verteporfin for injection intravenously at 10 mg/kg/day during organogenesis. The no observed adverse effect level (NOAEL) for maternal toxicity was 3 mg/kg/day (approximately 7-fold the human exposure at 6 g/m^2 based on body surface area). There were no teratogenic effects observed in rabbits at doses up to 10 mg/kg/day.

Nursing Mothers Verteporfin and its diacid metabolite have been found in the breast milk of one woman after a 6 mg/m^2 infusion. The verteporfin breast milk levels were up to 66% of the corresponding plasma levels. Verteporfin was undetectable after 12 hours. The diacid metabolite had lower peak concentrations but persisted up to at least 48 hours. Because the effects of verteporfin and its metabolite on neonates are unknown, either nursing should be interrupted or treatment postponed, taking into account the risks of delayed treatment to the mother. Women should not nurse for 96 hours after Visudyne* Therapy.

Pediatric Use Safety and effectiveness in pediatric patients have not been established.

PRECAUTIONS

General Extravasation of VISUDYNE*, especially if the affected area is exposed to light, can cause severe pain, inflammation, swelling or discoloration at the injection site. The relief of pain may require analgesic treatment.

Standard precautions should be taken during infusion of VISUDYNE* (verteporfin) to avoid extravasation. Examples of standard precautions include, but are not limited to:

- A free-flowing intravenous (IV) line should be established before starting VISUDYNE* infusion and the line should be carefully monitored.
- Due to the possible fragility of vein walls of some elderly patients, it is strongly recommended that the largest arm vein possible, preferably antecubital, be used for injection.
- Small veins in the back of the hand should be avoided.

If extravasation does occur, the infusion should be stopped immediately. The extravasation area must be thoroughly protected from direct light until the swelling and discoloration have faded in order to prevent the occurrence of a local burn which could be severe. Cold compresses should be applied to the injection site (see Warnings).

Visudyne* Therapy should be considered carefully in patients with moderate hepatic impairment or biliary obstruction since there is no clinical experience with verteporfin in such patients.

Chest pain, vaso-vagal reactions and hypersensitivity reactions, which on rare occasion can be severe, have been reported. Both vaso-vagal and hypersensitivity reactions are associated with general symptoms such as syncope, sweating, dizziness, rash, dyspnea, flushing, and changes in blood pressure and heart rate.

There is no clinical data related to the use of VISUDYNE* in anesthetized patients. At a >10-fold higher dose given by bolus injection to sedated or anesthetized pigs, verteporfin caused severe hemodynamic effects, including death, probably as a result of complement activation. These effects were diminished or abolished by pretreatment with antihistamine and they were not seen in conscious non-sedated pigs or in any other species, whether conscious or under general anesthesia. Caution should be exercised when Visudyne* Treatment under general anesthesia is considered (see WARNINGS).

VISUDYNE* at >5 times the expected maximum plasma concentration in treated patients caused a low level of complement activation in human blood in vitro. VISUDYNE* resulted in a concentration-dependent increase in complement activation in human blood in vitro. At 10 µg/ml (approximately 5 times the expected plasma concentration in human patients), there was mild to moderate complement activation. At ≥ 100 µg/mL, there was significant complement activation. Signs (chest pain, syncope, dyspnea, and flushing) consistent with complement activation have been observed in < 1% of patients administered VISUDYNE*. Patients should be supervised during VISUDYNE* infusion.

Photosensitivity Patients who receive VISUDYNE will become temporarily photosensitive for 2 days after the infusion. During that period, patients should avoid exposure of unprotected skin, eyes or other body organs to direct sunlight or bright indoor light. This includes, but is not limited to, tanning salons, bright halogen lighting and high power lighting used in surgical operating rooms or dental offices (see Warnings). Prolonged exposure to light from light emitting medical devices such as pulse oximeters should also be avoided for 48 hours following VISUDYNE* administration. If treated patients must go outdoors in daylight during the first 2 days after treatment, they should protect all parts of their skin and their eyes by wearing protective clothing and dark sunglasses. UV sunscreens are not effective in protecting against photosensitivity reactions because photoactivation of the residual drug in the skin can be caused by visible light. Patients should not stay in the dark and should be encouraged to expose their skin to ambient indoor light, as it will help inactivate the drug in the skin through a process called photobleaching.

Drug Interactions Drug interaction studies in humans have not been conducted with VISUDYNE*. Verteporfin is rapidly eliminated by the liver, mainly as unchanged drug. Metabolism is limited and occurs by liver and plasma esterases. Microsomal cytochrome P450 does not appear to play a role in verteporfin metabolism. Based on the mechanism of action of verteporfin, many drugs used concomitantly could influence the effect of Visudyne Therapy. Possible examples include the following. Calcium channel blockers, polymyxin B or radiation therapy could enhance the rate of VISUDYNE* uptake by the vascular endothelium. Other photosensitizing agents (e.g., tetracyclines, sulfonamides, phenothiazines, sulfonylurea hypoglycemic agents, thiazide diuretics and griseofulvin) could increase the potential for skin photosensitivity reactions. Compounds that quench active oxygen species or scavenge radicals, such as dimethyl sulfoxide, b-carotene, ethanol, formate and mannitol, would be expected to decrease VISUDYNE* activity. Drugs that decrease clotting, vasoconstriction or platelet aggregation, e.g., thromboxane A_2 inhibitors, could also decrease the efficacy of Visudyne Therapy.

Carcinogenesis, Mutagenesis, Impairment of Fertility No studies have been conducted to evaluate the carcinogenic potential of verteporfin. Verteporfin was not mutagenic, in the absence or presence of light, when studied in microbial mutagenicity, unscheduled DNA synthesis, mammalian point mutation, chromosome aberration, and mouse micronucleus assays.

Photodynamic therapy (PDT) as a class has been reported to result in DNA damage including DNA strand breaks, alkali-labile sites, DNA degradation, and DNA-protein cross links which may result in chromosomal aberrations, sister chromatid exchanges (SCE), and mutations. In addition, other photodynamic therapeutic agents have been shown to increase the incidence of SCE in Chinese hamster ovary (CHO) cells irradiated with visible light and in Chinese hamster lung fibroblasts irradiated with near UV light, increase mutations and DNA-protein cross-linking in mouse L5178 cells, and increase DNA-strand breaks in malignant human cervical carcinoma cells, but not in normal cells. Verteporfin was not evaluated in these latter systems. It is not known how the potential for DNA damage with PDT agents translates into human risk.

No effect on male or female reproduction has been observed in rats following intravenous administration of verteporfin for injection up to 10 mg/kg/day (approximately 60- and 40-fold human exposure at 6 mg/m^2 based on AUC_{inf} in male and female rats, respectively). Males were dosed 28 days prior to and during mating until necropsy (approximately 60 days). Females were dosed for 14 days prior to and during mating until Gestation Day 7.

Geriatric Use Approximately 90% of the patients treated with VISUDYNE* in the clinical efficacy trials were over the age of 65. A reduced treatment effect was seen with increasing age.

Fluorescein Angiography Standard precautions for fluorescein angiography should be observed. Certain medical conditions (such as pregnancy or allergy to fluorescein) may make the injection of fluorescein dye for a particular patient inadvisable in the opinion of the ophthalmologist. Approximately 1/225,000 patients may experience a severe reaction resulting in a heart attack, stroke, or death. Most reactions are mild, such as temporary nausea or vomiting in a few patients and a rash, hives, or wheezing in about 1%.

Effects on ability to drive and use machines Following Visudyne* Therapy, patients may develop transient visual disturbances such as abnormal vision, vision decrease, or visual field defects that may interfere with their ability to drive or use machines. Patients should be advised to not drive or use machines as long as these symptoms persist.

ADVERSE REACTIONS In randomized clinical trials in choroidal neovascularization, mainly in patients with age-related macular degeneration (AMD), the most frequently reported adverse events to VISUDYNE* (verteporfin) are injection site reactions (including pain, edema, inflammation, extravasation, rashes, and less commonly, hemorrhage and discoloration) and visual disturbances (including blurred vision, flashes of light, decreased visual acuity and visual field defects such as grey or dark haloes, scotoma and black spots). These events occurred in approximately 10-30% of patients. The following events, listed by Body System, occurred in 1-10% of patients:

Ocular Treatment Site: Blepharitis, cataracts, conjunctivitis/conjunctival injection, dry eyes, ocular itching, severe vision decrease with or without subretinal or vitreous hemorrhage

Body as a Whole:	Asthenia, infusion related pain primarily presenting as back pain, fever, flu syndrome, photosensitivity reactions.
Cardiovascular:	Atrial fibrillation, hypertension, peripheral vascular disorder, varicose veins
Dermatologic:	Eczema
Digestive:	Constipation, nausea
Hemic and Lymphatic:	Anemia, white blood cell count decreased, white blood cell count increased
Hepatic:	Elevated liver function tests
Metabolic/Nutritional:	Albuminuria, creatinine increased
Musculoskeletal:	Arthralgia, arthrosis, myasthenia
Nervous System:	Hypesthesia, sleep disorder, vertigo
Respiratory:	Cough, pharyngitis, pneumonia
Special Senses:	Cataracts, decreased hearing, diplopia, lacrimation disorder
Urogenital:	Prostatic disorder

Severe vision decrease, equivalent of 4 lines or more, within 7 days has been reported in 1-4% of patients. At least partial recovery of vision, defined as more than one line improvement of vision following the event, occurred in most patients (approximately 75% of patients).

Photosensitivity reactions usually occurred in the form of skin sunburn following exposure to sunlight during the first 2 days after treatment usually within 24 hours of VISUDYNE* infusion. The higher incidence of back pain in the VISUDYNE* group occurred primarily during infusion and was not associated with any evidence of hemolysis or allergic reaction and usually resolved by the end of the infusion.

The following adverse events have occurred either at low incidence (<1%) during clinical trials or have been reported during the use of VISUDYNE* in clinical practice where these events were reported voluntarily from a population of unknown size and hence the frequency of occurrence cannot be determined precisely. They have been chosen for inclusion based on factors such as seriousness, frequency of reporting, possible causal connection to VISUDYNE*, or a combination of these factors:

Ocular Treatment Site: Retinal detachment (nonrhegmatogenous), retinal or choroidal vessel nonperfusion, severe vision decrease with retinal hemorrhage.

Nonocular Events: Chest and back pain (which may radiate to other areas including but not limited to pelvis, shoulder, girdle or rib cage) and other musculoskeletal pain during infusion.

Vaso-vagal and hypersensitivity reactions can occur, which on rare occasions can be severe. General symptoms can include headache, malaise, syncope, sweating, dizziness, rash, urticaria, pruritus, dyspnea, flushing and changes in blood pressure or heart rate.

Adverse reactions reported in treated eyes in patients with pathologic myopia or presumed ocular histoplasmosis were similar to those reported in AMD patients.

SYMPTOMS AND TREATMENT OF OVERDOSAGE Overdose of drug and/or light in the treated eye may result in nonperfusion of normal retinal vessels with the possibility of severe decrease in vision that could be permanent. An overdose of drug will also result in the prolongation of the period during which the patient remains photosensitive to bright light. In such cases, it is recommended to extend the photosensitivity precautions for a time proportional to the overdose.

DOSAGE AND ADMINISTRATION A course of Visudyne* Therapy is a two-step process requiring administration of both drug and light. The first step is the intravenous infusion of VISUDYNE* (verteporfin). The second step is the activation of VISUDYNE* with light from a nonthermal diode laser. The physician should re-evaluate the patient every 3 months and if choroidal neovascular leakage is detected on fluorescein angiography, therapy should be repeated.

Lesion Size Determination The greatest linear dimension (GLD) of the lesion is estimated by fluorescein angiography and color fundus photography. All classic and occult CNV, blood and/or blocked fluorescence, and any serous detachments of the retinal pigment epithelium should be included for this measurement. Fundus cameras with magnification within the range of 2.4-2.6X are recommended. The GLD of the lesion on the fluorescein angiogram must be corrected for the magnification of the fundus camera to obtain the GLD of the lesion on the retina.

Spot Size Determination The treatment spot size should be 1000 microns larger than the GLD of the lesion on the retina to allow a 500 micron border, ensuring full coverage of the lesion. The maximum spot size used in the clinical trials was 6400 microns. The nasal edge of the treatment spot must be positioned at least 200 microns from the temporal edge of the optic disc, even if this will result in lack of photoactivation of CNV within 200 microns of the optic nerve. For treatment of lesions that are larger than the maximum treatment spot size, apply the light to the greatest possible area of active lesion.

VISUDYNE* Administration VISUDYNE* should be reconstituted according to the directions given under PHARMACEUTICAL INFORMATION, Reconstitution. The volume of reconstituted VISUDYNE* required to achieve the desired dose of 6 mg/m^2 body surface area is withdrawn from the vial and diluted with 5% Dextrose for Injection to a total infusion volume of 30 mL. The full infusion volume is administered intravenously over 10 minutes at a rate of 3 mL/minute, using an appropriate syringe pump and in-line filter. The clinical studies were conducted using a standard infusion line filter of 1.2 microns. Precautions should be taken to prevent extravasation at the injection site. If extravasation occurs, protect the site from light (see Precautions).

Light Administration Initiate 689 nm wavelength laser light delivery to the patient 15 minutes after the start of the 10-minute infusion with VISUDYNE*. Photoactivation of VISUDYNE* is controlled by the total light dose delivered. In the treatment of choroidal neovascularization, the recommended light dose is 50 J/cm^2 of neovascular lesion administered at an intensity of 600 mW/cm^2. This dose is administered over 83 seconds. Light dose, light intensity, ophthalmic lens magnification factor and zoom lens setting are important parameters for the appropriate delivery of light to the predetermined treatment spot. Follow the laser system manuals for procedure set up and operation. The laser system must be acceptable for the delivery of a stable power output at a wavelength of 689±3 nm. Light is delivered to the retina as a single circular spot via a fiber optic and a slit lamp, using a suitable ophthalmic magnification lens. The following laser systems have been tested for compatibility with VISUDYNE* and are acceptable for the delivery of a stable power output at a wavelength of 689±3 nm:

Lumenis Opal Photoactivator laser console and modified LaserLink adapter, Manufactured by Lumenis, Inc., Santa Clara, CA

Zeiss VISULAS 690s laser and VISULINK PDT adapter, Manufactured by Carl Zeiss, Inc., Thornwood, NY.

Concurrent Bilateral Treatment The controlled trials only allowed treatment of one eye per patient. In patients who present with eligible lesions in both eyes, physicians should evaluate the potential benefits and risks of treating both eyes concurrently. If the patient has already received previous Visudyne* Therapy in one eye with an acceptable safety profile, both eyes can be treated concurrently after a single administration of VISUDYNE*. The more aggressive lesion should be treated first, at 15 minutes after the start of infusion. Immediately at the end of light application to the first eye, the laser settings should be adjusted to introduce the treatment parameters for the second eye, with the same light dose and intensity as for the first eye, starting no later than 20 minutes from the start of infusion. In patients who present for the first time with eligible lesions in both eyes without prior Visudyne* Therapy, it is prudent to treat only one eye (the most aggressive lesion) at the first course. One week after the first course, if no significant safety issues were identified, the second eye can be treated using the same treatment regimen after a second VISUDYNE* infusion. Approximately 3 months later, both eyes can be evaluated and concurrent treatment following a new VISUDYNE* infusion can be started if both lesions still show evidence of leakage.

AVAILABILITY OF DOSAGE FORMS VISUDYNE* (verteporfin) is supplied in a single-use glass vial with a gray bromobutyl stopper and aluminium flip-off cap. It contains a lyophilized cake with 15 mg verteporfin. The product is intended for intravenous injection only.

Product monograph available upon request. September 2004.

QLT Inc. Vancouver Canada V5T 4T5

Co-developed and distributed by:

NOVARTIS OPHTHALMICS

Novartis Ophthalmics, Novartis Pharmaceuticals Canada Inc. Mississauga, ON L5N 2X7

* Visudyne is a registered trademark

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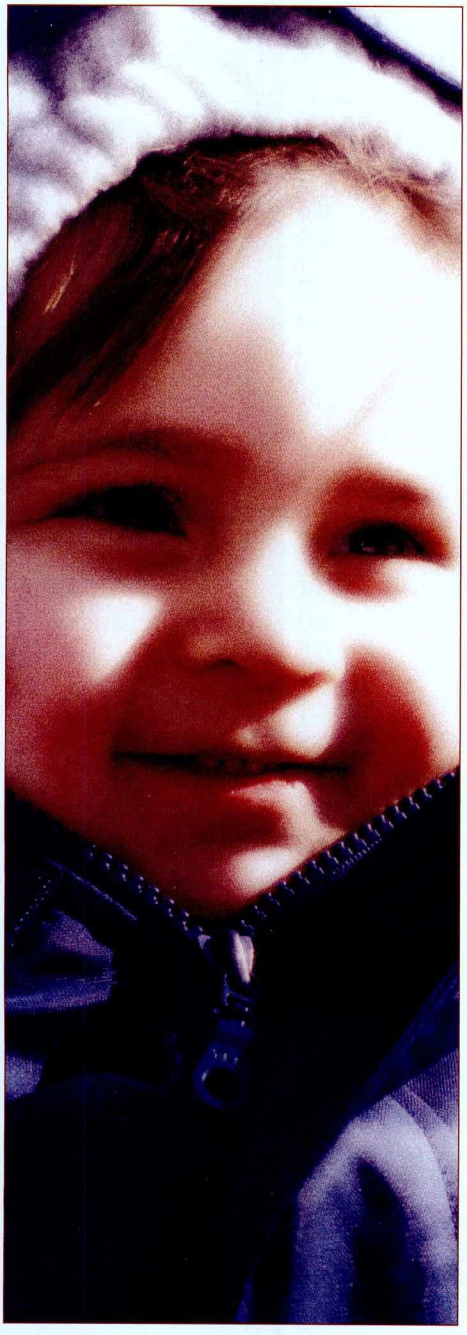
PAAB

National Model: An approach to comprehensive eye examinations for children entering the school system



Children's Vision Initiative, a division of the Canadian Association of Optometrists

In February 2005, the Children's Vision Initiative (CVI) of the Canadian Association of Optometrists (CAO) submitted a project funding application to the Community Development and Partnerships Directorate of Social Development Canada. While the submission did not ultimately meet the requirements for funding, the application process proved to be a beneficial exercise in clearly articulating CAO's approach for comprehensive eye examinations for children entering the school system. CVI may also use the material to apply to other government programs.

The focus of the CVI is to ensure that Canadian children have a complete eye examination before or minimally by the time they enter school to allow any vision problems to be addressed. The CVI will continue working at a federal and provincial level to move this important project forward, ultimately leading to comprehensive eye care for all children in Canada.

Following please find excerpts from the February 2005 submission, which profiles the history and goals of CVI. Special thanks to Dr Dorrie Morrow, CVI Chair, and to CAO Executive Director Glenn Campbell, who prepared the summary and report.

Overview

Ten percent of all preschoolers have vision deficiencies and this increases to 25% in grades K-6. The incidence of vision problems is much higher in children at risk. Sixty percent of children labeled as having learning problems have vision problems. Aboriginal children have sig-

nificantly higher incidence of refractive error. With an increased prevalence of diabetes, the associated ocular manifestations (e.g. diabetic retinopathy) are a growing concern. Diabetic retinopathy has long been identified as the leading cause of vision loss amongst Aboriginal people.

Despite this, only 14% of Canadian children under six years of age receive professional eye care. Undetected and untreated vision problems interfere in a child's ability to learn in school and to participate fully in sports and other childhood activities. Visual impairment in children is associated with developmental delays and the need for special education, vocational and social services, often beyond childhood and into adulthood.

Federal and provincial ministers have identified the importance of ensuring children enter school ready to learn and have been supporting a number of worthwhile programs. However, the explicit connection between how well children see and how well children learn has not been fully recognized, addressed and prioritized in most provinces in Canada.

Since CVI began, it has extensively reviewed the experiences of groups outside of Canada, initiated several Canadian pilot projects and supported public education programs aimed at parents, day cares, hospitals and public health authorities. In the process, it has also worked with a variety of governments and community groups.

Based on these experiences, CAO has developed a community outreach strategy and public communications program that is a cost-effective and optimal way to ensure the largest number of children receive an eye examination by the time they enter grade one. A pilot project was tested in 2003/2004 in a large Alberta school district. The pilot was managed by the local leadership of the Alberta Association of Optometrists (AAO) with the full support of the Alberta Ministry of Children's Services, local teachers, public health authorities, trustees, and parents, as well as the local optometric and ophthalmologic community.

All participants acknowledged the results as successful and significant. Forty five per cent (compared to 14%) of the eligible children or 453 children out of 1000 eligible were examined. Twelve percent of the children examined had vision or eye health problems that would have affected learning either moderately or significantly. A higher percentage of vision problems were found in specific groups of at-risk children.

On the basis of the success of this pilot, the Alberta Government strongly recommended that this program be implemented by all school boards in the province. Starting in the 2005 school year a coordinator for northern Alberta was in place to facilitate the process. Over the next three years, this program will expand to include another coordinator who will be employed to address the needs of the school districts in the southern part of the province and will be embraced by the majority of school districts within Alberta. This planned expansion is expected to yield dramatic results. However, experience from our first pilot suggested 'take up" will be uneven across the province and some schools and groups of student in the province will not benefit to the extent they could.

The CAO is seeking support for these pilot projects with the ultimate objective of developing a written body of knowledge (research, manuals, templates, teaching materials) for promoting, managing and implementing this program to meet the needs of both the general population of children entering school and the 'at-risk communities'. This would form the basis of discussion with the Government of Alberta to improve the newly introduced program to meet the needs of those specific groups. It would be disseminated across Canada to provincial governments, educators, public health authorities and community and NGO groups dedicated to the improvement of children's well being, health and readiness to learn. Our goal is to see implementation of this program in every province and territory in Canada.

Factors under Early Learning and Child Care – Enhancement of Children's Development

The project will be interdisciplinary or cross-sectoral involving optometric communities within Canada as well as ophthalmologists, family physicians, public health professionals, education officials and teacher, school board trustees and parents as well as groups working with inner city, special needs and aboriginal children.

The project builds and extrapolates upon the pilot

ARTICLE

program developed and implemented by the AAO, the Elk Island Public School district (EIPS), the regional health districts within the area of EIPS, the Ministry of Children's Services (Government of Alberta) in 2003/2004.

The direct assumption and rationale for the pilot projects in our proposal is the recognition that different children may need different strategies and our intent is to identify and develop approaches that allow us to successful adapt this program to the needs of inner-city, special needs, and aboriginal children.

Project Objectives

① Make an immediate beneficial impact on the children entering school in our pilot project school districts by ensuring that more of them will receive a comprehensive eye examination than would otherwise be the case without this initiative. More children will be ready to learn and more capable of learning to their potential. Schools and parents will benefit over time because of reduced strain and the need for special resources.

② Understand the issues around delivering this program to inner city, special needs, and aboriginal children and develop tools and strategies to address their needs.

③ Carry this model to another province to demonstrate relevance and portability of the model.

④ Develop a fully developed body of knowledge to support the implementation of this program across the country including research, teaching materials, templates and manuals.

⑤ Develop and implement a communications strategy to disseminate the results of this work.

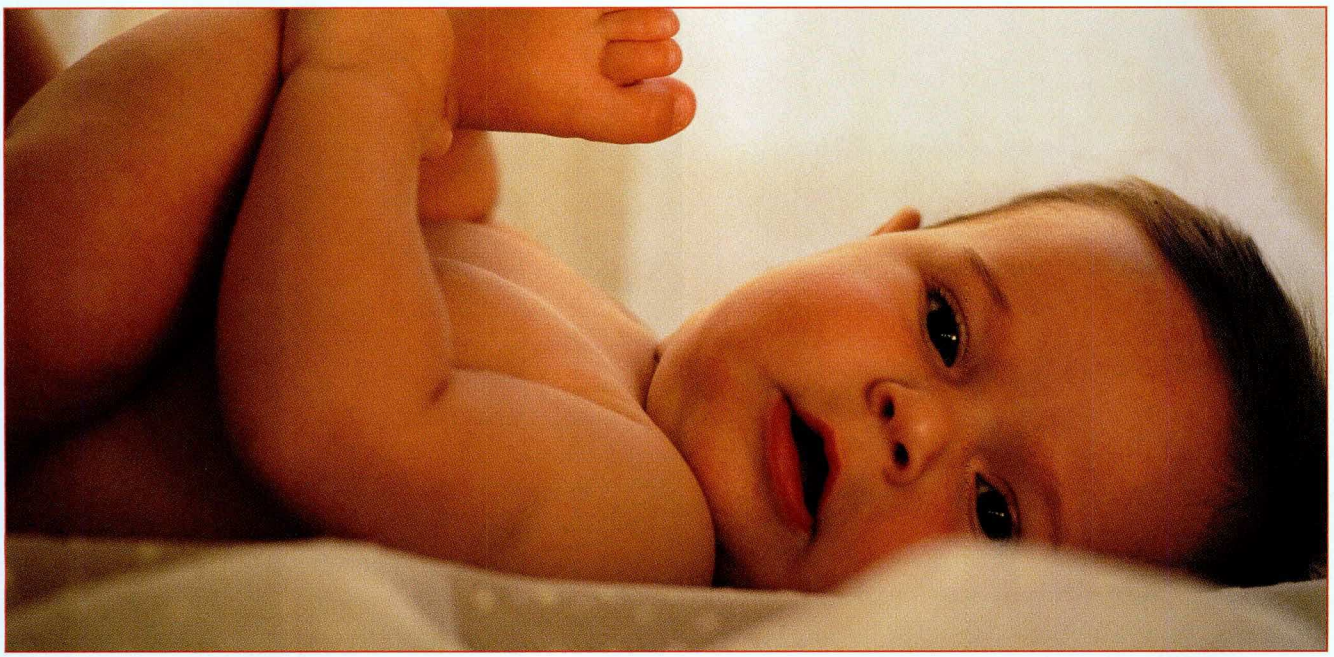
Approach or Methodology

Program Delivery and Research Methods

The school board's administration and education staff and professionals in the pilot communities will deliver the program. There will be community outreach aimed at these groups and a full range of support materials provided to them. The first step will be to create a community volunteer working group that will include a teacher, parent, school board administrator, local non-optometric health professional, and public health official.

The active participation of the ECS teacher community is critical both to the delivery of the program and the collection of the research results. There will be a series of in-service educational presentation and Q & A sessions with these teachers to explain the program and provide background materials.

A research net will be established that requires both



the teachers and eye care health professionals in the pilot region to maintain records and report results. There will also be structured questionnaires for parents and the teaching community. One of the outputs for the aboriginal student pilot will be a grid map to determine the extent to which any supply constraints of eye health professionals, specifically in rural aboriginal areas undermine the delivery of the program. Dr Deborah Jones, who is a leading expert on children's eye health and vision care, from the University of Waterloo, will independently tabulate these results.

Products or Outputs

Outputs of this project will include:

1. Research reports which detail the 'take up' rate among the inner city, special needs and aboriginal children, the range of vision issues encountered and where there is deviation from the general population and recommendation to improve program delivery to these groups.
2. Detailed Manual
3. Teaching materials
4. Program templates for letters and forms.
5. Detailed research report with recommendations
6. Questionnaire results
7. Press releases
8. Presentation materials
9. Talking Points

Beneficiaries

- The immediate beneficiaries of this program will be the inner city, special needs and aboriginal children aged 4 -5 years old in the targeted school districts.
- The second order of beneficiaries will be the parents of those children and the teachers and school boards directly involved in the three pilots.
- The third order of beneficiaries will be the children, parents and school boards across Alberta because there will be fertile ground and a newly established vehicle to cascade what has been learned throughout the province.
- The fourth order of beneficiaries will be children, parents and school boards across Canada as we promote and they adopt this model.
- The fifth order of beneficiaries will be eye care and educational researchers because this program will increasingly yield a wealth of raw data on the prevalence and learning impacts of visual impairment amongst young children, particularly inner city, special needs and aboriginal children.
- The sixth order of beneficiary is Canadian society. Removing barriers to children's readiness to learn is an investment in all our futures.

Intended Results

- Child will start school without a vision or eye health problem that may affect their chances of academic success. (Measured by the number of children who receive an eye examination benchmarked against national and provincial averages.)
- The needs of certain groups of children – inner city, special needs, and aboriginal children – will be clearly identified and addressed.
- Vision conditions will be diagnosed and treated appropriately - reducing the incidence of learning impairment and in the most extreme circumstances permanent vision loss. (Documented based on records provided by eye heath care professionals in the pilot areas.)
- Parents/guardians will gain knowledge about eye health and vision care for infants and children. (Measured by structured questionnaires.)
- Empowerment of the parents to make appropriate/ beneficial health care decisions for their children.
- Educators/caregivers will realize the "fruits of their efforts" by having children in their care that possess the visual skills required to benefit from what is being taught. (Measured by post program interviews.)
- The health-care and educational community will be working collaboratively in promoting awareness and understanding of the critical relationship between vision and learning, with particular reference to the targeted groups of children. (A byproduct of the collaborative effort.)

With success, the project has the potential to effect change within the early childhood learning environment, the health-care community, the educational system and later the social welfare system and the justice system.

ARTICLE

Modèle national: Une approche des examens de la vue complets pour les enfants entrant à l'école

En février 2005, l'Initiative pour la vision des enfants (IVE) de l'Association canadienne des optométristes (ACO) a présenté une demande de subvention à la Direction du développement communautaire et des partenariats de Développement social Canada. Même si la demande n'a pas répondu en fin de compte à toutes les exigences d'une subvention, le processus de demande aura quand même permis d'articuler clairement l'approche de l'ACO à l'égard des examens de la vue complets pour les enfants entrant à l'école. L'IVE pourrait aussi utiliser le fruit de ce travail pour demander une subvention à d'autres programmes gouvernementaux.

L'objectif de l'IVE est de faire en sorte que tous les enfants canadiens reçoivent un examen de la vue complet avant ou sinon au moment de leur entrée à l'école afin de traiter tout problème de la vue. L'IVE continuera à faire avancer ce projet important aux échelons fédéral et provincial de manière que tous les enfants du Canada puissent en bout de ligne recevoir des soins oculo-visuels complets.

Vous trouverez ci-après des extraits de la demande présentée en février 2005, qui décrit l'historique et le but de l'IVE. Nous remercions spécialement la Dre Dorrie Morrow, présidente de l'IVE, et M. Glenn Campbell, directeur général de l'ACO, qui ont préparé le résumé et le rapport.

Aperçu

Dix pour cent de tous les enfants d'âge préscolaire ont des troubles de la vue et ce pourcentage augmente à 25 % chez les enfants de l'école maternelle à la sixième année. L'incidence des problèmes de la vue est beaucoup plus élevée chez les enfants à risque. Soixante pour cent des enfants classés comme ayant des problèmes d'apprentissage présentent des problèmes de la vue. L'incidence de l'erreur de réfraction chez les enfants autochtones est beaucoup plus élevée. Devant la prévalence accrue du diabète, les manifestations oculaires associées (p. ex., la rétinopathie diabétique) sont de plus en plus préoccupantes. La rétinopathie diabétique est depuis longtemps la cause principale de la perte de la vue au sein de la population autochtone.

Malgré cela, seulement 14 % des enfants canadiens de moins de six ans reçoivent des soins oculo-visuels professionnels. Des problèmes de la vue non détectés et non traités gênent la capacité d'apprentissage de l'enfant à l'école et l'empêchent de participer pleinement à des sports et à d'autres activités de l'enfance. Un handicap visuel chez les enfants est associé à des retards dans le développement et au besoin d'une éducation spécialisée et de services professionnels et sociaux, souvent même au-delà de l'enfance et jusqu'à l'âge adulte.

Reconnaissant l'importance de tout mettre en œuvre pour que les enfants soient prêts à apprendre lorsqu'ils entrent à l'école, des ministres fédéraux et provinciaux continuent à appuyer des programmes utiles. Toutefois, la plupart des provinces au Canada n'ont pas pleinement pris connaissance du lien direct entre une bonne vision et un bon apprentissage et elles devront aborder cette question et en faire une véritable priorité.

Depuis ses débuts, l'IVE a examiné à fond des expériences de groupes à l'extérieur du Canada, mis en branle plusieurs projets pilotes et soutenu des programmes d'éducation publique à l'intention des parents, des services de garde, des responsables d'hôpitaux et de la santé publique. Ce faisant, elle a aussi travaillé avec une diversité de groupes communautaires et gouvernementaux.

À partir de ces expériences, l'ACO a conçu une stratégie communautaire et un programme de communication publique optimal et rentable pour garantir un examen de la vue au plus grand nombre d'enfants avant leur première année d'école. Un projet pilote a été mis à l'essai en 2003-2004 dans un grand district scolaire d'Alberta par les dirigeants locaux de l'Association des optométristes de l'Alberta (AAO) avec l'appui

inconditionnel du ministère des Services à l'enfance de l'Alberta, des enseignants locaux, des responsables de la santé publique, des conseillers, des parents et de la collectivité optométrique et ophtalmologique locale.

Les participants ont été unanimes à dire que les résultats sont très positifs et significatifs. Quarante-cinq pour cent (comparé à 14 %) des enfants admissibles (ou 453 enfants des 1 000 enfants admissibles) ont été examinés. Douze pour cent des enfants examinés présentaient des problèmes de santé oculo-visuelle qui auraient légèrement ou fortement affecté leur apprentissage. Un pourcentage plus élevé de problèmes de la vue ont été dépistés chez des groupes spécifiques d'enfants à risque.

Inspiré par la réussite de ce projet pilote, le gouvernement albertain a vivement recommandé la mise en œuvre de ce programme dans tous les conseils scolaires de la province. Au début de l'année scolaire 2005, un coordonnateur facilitait le processus pour le nord de l'Alberta. D'ici trois ans, un autre coordonnateur sera embauché pour répondre aux besoins des districts scolaires du sud de la province, et le programme s'étendra à la plupart des districts scolaires de l'Alberta. On s'attend à ce que cette croissance planifiée produise des résultats exceptionnels. Toutefois, l'expérience de notre projet pilote nous indique que la mise en œuvre ne sera pas uniforme dans la province et que des écoles et groupes d'étudiants n'en retireront pas tous les avantages prévus.

L'ACO cherche de l'aide pour ces projets pilotes et se donne comme objectif final de constituer une documentation (études, manuels, modèles, matériel didactique) qui servira à la promotion, à la gestion et à la mise en œuvre de ce programme afin de répondre aux besoins de la population générale des enfants qui entrent à l'école et des communautés à risque. Cette démarche sera utilisée pour amorcer la discussion avec le gouvernement de l'Alberta afin que le nouveau programme réponde aux besoins de ces groupes spécifiques. La documentation sera envoyée partout au Canada aux gouvernements provinciaux, aux éducateurs, aux collectivités et aux responsables de la santé publique et aux ONG qui se consacrent à l'amélioration du bien-être et de la santé des enfants de même qu'à leur préparation à l'apprentissage. Notre but : assurer la mise en œuvre de ce programme dans chaque province et territoire au Canada.

Facteurs sous-jacents au premier apprentissage et aux soins aux enfants – Mise en valeur du développement des enfants

Ce projet interdisciplinaire ou intersectoriel fera appel aux collectivités optométriques du Canada de même qu'aux ophtalmologistes, médecins de famille, professionnels de la santé publique, responsables de l'éducation et enseignants, conseillers scolaires et parents de même qu'aux groupes travaillant avec les enfants des centre-ville, les enfants ayant des besoins spéciaux et les enfants autochtones.

Le programme étendra le projet pilote élaboré et mis en œuvre en 2003-2004 par l'AAO, le district des écoles publiques Elk Island (EIPS), les districts régionaux de santé publique de l'EIPS et le ministère des Services à l'enfance (gouvernement de l'Alberta).

L'hypothèse et la raison d'être qui sous-tendent directement les projets pilotes de notre proposition reposent sur l'énoncé que des enfants différents peuvent nécessiter des stratégies différentes, et notre but est de préciser et d'élaborer des approches qui nous permettront d'adapter avec succès ce programme aux enfants des centre-ville, aux enfants ayant des besoins spéciaux et aux enfants autochtones.

Objectifs du projet

① Avoir une incidence positive immédiate sur les enfants qui entrent à l'école dans les districts scolaires appliquant notre projet pilote, afin qu'un plus grand nombre d'entre eux reçoivent un examen de la vue complet grâce à cette initiative. Plus d'enfants seront prêts à apprendre et à atteindre leur potentiel d'apprentissage. Au fil du temps, les écoles et les parents en profiteront aussi par une diminution du stress et du besoin de ressources spécialisées.

② Comprendre les questions liées à l'application de ce programme aux enfants des centre-ville, aux enfants ayant des besoins spéciaux et aux enfants autochtones, et concevoir des outils et des stratégies pour répondre à leurs besoins.

③ Instaurer ce modèle dans une autre province pour en démontrer la pertinence et la transférabilité.

④ Élaborer un ensemble de connaissances approfondies assorties à la mise en œuvre de ce programme au pays, notamment des études, du matériel didactique, des modèles et des manuels.
⑤ Élaborer et mettre en œuvre une stratégie de communication pour diffuser les résultats de ce travail.

Approche ou méthodologie

Application du programme et méthodes de recherche

La direction du conseil scolaire, le personnel enseignant et les professionnels des collectivités pilotes se chargeront de dispenser le programme. Une approche communautaire ciblera ces groupes et une gamme complète d'outils de travail leur sera fournie. La première étape consistera à créer un groupe de travail formé de bénévoles de la collectivité, notamment un enseignant, un parent, un directeur de conseil scolaire, un professionnel non optométrique de la santé locale, et un responsable de la santé publique.

La participation active de la communauté enseignante ECS est importante tant pour la réalisation du programme que pour la collecte des résultats de la recherche. Il y aura une série de présentations éducatives internes et des sessions de questions et réponses avec ces enseignants afin de leur expliquer le programme et de leur fournir une documentation.

Un réseau de recherche sera créé et on demandera aux enseignants et aux professionnels des soins de santé oculo-visuels dans la région pilote de tenir des dossiers et de présenter des résultats. Il y aura également des questionnaires approfondis pour les parents et la communauté enseignante. Le projet pilote auprès des écoliers autochtones produira notamment une carte quadrillée qui servira à déterminer lorsque les contraintes de l'offre de professionnels de la santé oculo-visuelle, spécialement dans les secteurs autochtones ruraux, minent la réalisation du programme. La Dre Deborah Jones, une des grandes spécialistes de la santé et des soins oculo-visuels de l'Université de Waterloo, totalisera ces résultats de façon indépendante.

Produits ou résultats

Les résultats de ce projet incluront

❶ Des rapports de recherche qui préciseront le taux « d'application » auprès des enfants des centre-ville, des enfants ayant des besoins spéciaux et des enfants autochtones, la gamme des problèmes de la vue dépistés et les exceptions à la population générale, et enfin des recommandations pour améliorer la mise en œuvre du programme auprès de ces groupes.
❷ Un manuel détaillé
❸ Du matériel didactique
❹ Des modèles de lettres et de formulaires du programme
❺ Des rapports de recherche présentant des résultats détaillés et des recommandations
❻ Les résultats du questionnaire
❼ Des communiqués de presse
❽ Des trousses de présentation
❾ Des points de discussion

Bénéficiaires

⊙ Les premiers bénéficiaires de ce programme seront les enfants des centre-ville, les enfants ayant des besoins spéciaux et les enfants autochtones âgés de quatre et cinq ans dans les districts scolaires ciblés.
⊙ Les bénéficiaires de deuxième ligne seront les parents de ces enfants et les enseignants et les conseils scolaires participant directement à ces trois projets pilotes.
⊙ Les bénéficiaires de troisième ligne seront les enfants, les parents et les conseils scolaires de l'Alberta parce qu'il y aura un terrain fertile et un nouveau moyen de propager en cascade ce que nous aurons appris partout dans la province.
⊙ Les bénéficiaires de quatrième ligne seront les enfants, les parents et les conseils scolaires au Canada à qui nous aurons fait la promotion de ce modèle et qui l'auront adopté.
⊙ Les bénéficiaires de cinquième ligne seront les chercheurs en éducation et en soins oculo-visuels parce que ce programme produira de plus en plus une abondance de données brutes sur la prévalence et les incidences sur l'apprentissage d'un handicap visuel chez les jeunes enfants, spécialement ceux des centre-ville, ceux qui ont des besoins spéciaux et ceux d'origine autochtone.
⊙ Le bénéficiaire de sixième ligne sera la société canadienne. Supprimer chez les enfants les obstacles

à l'apprentissage est un investissement pour l'avenir dans tous les domaines.

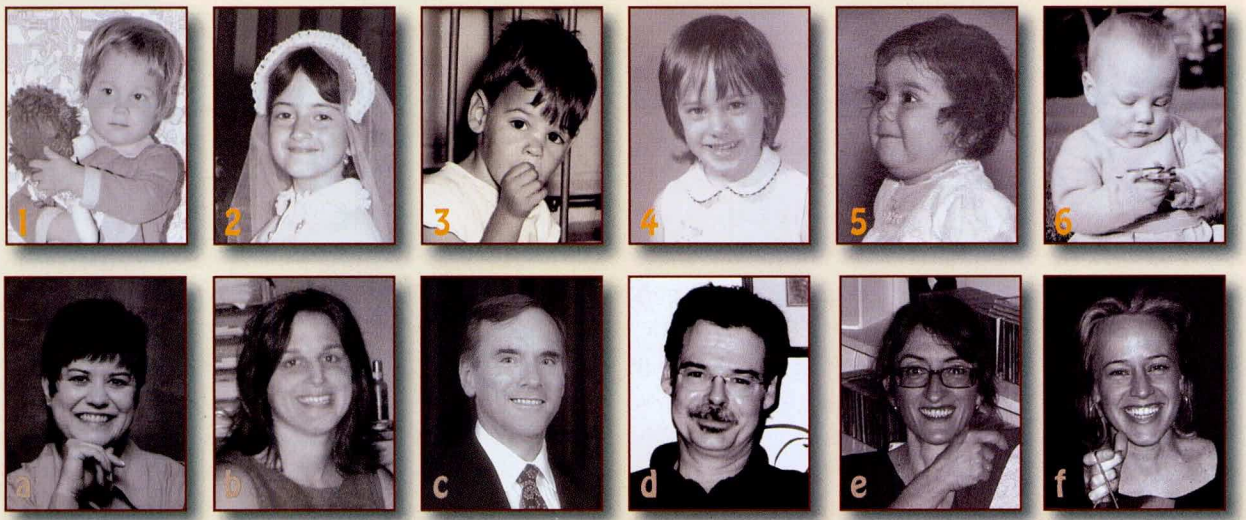
Résultats prévus

- L'enfant commencera l'école sans un problème de santé oculo-visuelle qui risque de compromettre sa réussite scolaire. (Comparaison entre le nombre d'enfants qui reçoivent un examen de la vue et les moyennes nationale et provinciales.)
- On précisera clairement les besoins de certains groupes d'enfants – ceux des centre-ville, ceux qui ont des besoins spéciaux et ceux d'origine autochtone – et on y répondra.
- Les problèmes de la vue seront diagnostiqués et traités de façon appropriée – réduisant ainsi l'incidence d'un handicap sur l'apprentissage et, dans les pires scénarios, la perte permanente de la vision. (Documenté à partir des données fournies par les professionnels de la santé oculo-visuelle dans les secteurs pilotes.)
- Les parents/tuteurs seront mieux informés des soins et de la santé oculo-visuels des bébés et des enfants. (Mesuré par les questionnaires approfondis.)
- Des parents mieux à même de prendre des décisions appropriées et positives concernant les soins de santé pour leurs enfants.
- Des éducateurs/fournisseurs de soins qui verront les fruits de leur travail, car les enfants sous leur responsabilité possèderont les habiletés visuelles requises pour tirer profit de leur enseignement. (Mesuré par des interviews à la suite du programme.)
- Les milieux de l'éducation et des soins de santé travailleront de concert pour promouvoir la sensibilisation et la compréhension du lien important entre la vision et l'apprentissage, en insistant particulièrement sur les groupes d'enfants ciblés. (Un sous-produit de l'effort conjoint.)

Avec des résultats positifs, ce projet peut susciter des changements au sein de l'environnement d'apprentissage de la petite enfance, du milieu des soins de santé, du système d'éducation et, plus tard, du système de sécurité sociale et de justice.

WHO'S WHO?

The staff at the Canadian Association of Optometrists submitted photos of 'then' and now. Can you match all the baby photos to the adults shown below? Answers at bottom of page.



Lise Loyer, Director, Optometric Assistants Course

Catherine Heinmiller, Executive Assistant

Glenn Campbell, Executive Director

Doug Dean, Director, Vision Care Plan

Claudette Gagnon, Administrative Assistant

Doris Mirella, Director of Communications

Answers: 1-b; 2-e; 3-d; 4-f; 5-a; 6-c (Glenn shows interest in optometry at a young age!)

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1. Results of in vitro study following FDA/ISO Stand-Alone Procedure for Disinfecting Products, Primary Criteria. 2. Data on file, Bausch & Lomb Incorporated. 3. Aston University Technical Report, Birmingham, England (April, 1997)

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1 *than original Focus DAILIES. CIBA Vision. Data on file, 2004.