Selected Abstracts from the Orthoptics Australia 70th Annual Scientific Conference held in Hobart 3 to 6 November 2013

PATRICIA LANCE LECTURE FINDING THE LEADER WITHIN

Sue Silveira

The Patricia Lance Lecture was presented by Sue Silveira at the 70th Annual Scientific Conference, Hobart, November 2013. Patricia Lance was recognised for her contribution to the profession of Orthoptics, with brief details of her professional career and achievements provided. The lecture outlined the changes to the educational program in NSW, including the closure of the Discipline of Orthoptics, Faculty of Health Science, University of Sydney, the establishment of Orthoptics Australia Tertiary Education Working Party and the activities this working party has undertaken in 2013 to secure a new educational program for Orthoptics in NSW.

Key findings regarding the professional orthoptic workforce which have been used in submissions to universities were presented. The need for continued leadership within the profession of Orthoptics was also discussed, with members asked to 'find the leader within'.

LASER CATARACTS

Sabrina D'Avino Sagar

'Laser cataracts' is a new and exciting technology with only seven Alcon Lens Sx machines in New South Wales. The presentation described the procedure, the benefits of laser cataract surgery, the orthoptist's role with the Laser Sx and some results.

ABNORMAL HEAD POSTURES IN CHILDREN

Jodie Attard, Priya Naryan

The presence of an abnormal head posture (AHP) is a significant finding in an orthoptic assessment. The impact of the AHP needs to be considered during the course of the assessment as thorough assessment may give diagnostic clues and could impact the patient's management plan. This presentation gave an overview of the incidence and causes of abnormal head postures in children, both ocular and non-ocular causes, with focus on the ocular reasons and benefits of adopting an AHP.

CORNEAL CROSS-LINKING: OUTCOMES IN THE TREATMENT OF KERATOCONUS

Ana Alexandratos

Keratoconus is a degenerative condition of the cornea which causes distortion and buckling. The thinning and bulging of corneal tissue is a result of weakened collagen bonds. Corneal cross-linking has been used to treat mild to moderate forms of keratoconus, but how effective is it?

This presentation looked at a group of patients undergoing this treatment and evaluated the outcomes using Pentacam imaging with discussion of the limits of this treatment, and when a corneal graft is the only treatment option.

THE ACCURACY OF ORTHOPTISTS IN INTERPRETING MACULAR OCT IMAGES

Jess Boyle, Yong Ern Lim, Meri Vukicevic, Connie Koklanis

Age-related macular degeneration (AMD) is the leading cause of blindness and severe vision loss in Australia. The future demand for eye care services and number of patients requiring treatment for AMD is expected to rise, as Australia's aging population is increasing due to longer life expectancy. Patients diagnosed with AMD typically undergo regular monthly review, which includes visual acuity assessment and optical coherence tomography (OCT). The accurate interpretation of OCT images, including the detection of macular oedema, is crucial when determining whether anti-VEGF treatment is indicated in patients with AMD.

The past decade has seen an increase in the number of orthoptist-led screening and monitoring clinics for chronic eye conditions, with orthoptists expanding their roles to include amblyopia screening, glaucoma monitoring and triage assessment. The accuracy of orthoptists in interpreting OCT images for screening and/or monitoring purposes is of particular interest given the growing demand for eye healthcare services.

This clinical audit investigated the rate of agreement between orthoptists and an ophthalmologist working in a private ophthalmology clinic in determining whether anti-VEGF treatment for AMD is indicated based on OCT appearance. Data collection for this clinical audit is still in process. The preliminary results of this audit will be discussed.

IMAGING IN AGE-RELATED MACULAR DEGENERATION

Kate Brassington, Chi Luu, Robyn Guymer

Since the Introduction of spectral domain OCTs there have been advances in the understanding of age-related macular degeneration (AMD) including the different stages of the disease. In the Macular Research Unit we have been following patients with the early stage of AMD with the Heidelberg Spectralis and the Cirrus OCT for two years to monitor their AMD with various imaging modalities and have been able to detect changes in the retinal layers and varying signs such as geographic atrophy before they can be seen clinically or on fundus photos. This presentation described new ways of looking at AMD through different imaging techniques and the different stages that lead to geographic atrophy in patients diagnosed with AMD.

VISUAL OUTCOMES OF CHILDREN SEEN IN THE StEPS HIGH PRIORITY CLINIC AT THE CHILDREN'S HOSPITAL AT WESTMEAD

Louise Brennan, Lindley Leonard

A retrospective review of the medical records of children referred to the StEPS High Priority Clinic at The Children's Hospital at Westmead was presented. Findings discussed included initial visual acuity, contributing factors, the number of points of service, treatments initiated and final visual acuity.

'I CAN'T SEE ANYTHING!': IS THIS VISION LOSS FUNCTIONAL?

Stephanie Crofts

Investigating functional vision loss can be time-consuming and difficult in children. This presentation described how to determine functional from true visual loss in a child who 'can't see anything'.

INVESTIGATING CATARACT REFERRAL PRACTICES UTILISED BY AUSTRALIAN OPTOMETRISTS

Vu Quang Do, Rebecca Li, Max Ma, Christopher Pooley, Carina Trinh, Laura Peattie, Anna Palagyi, Peter McCluskey, Lisa Keay

Background: The pathway to cataract surgery in Australia generally begins at the optometric level, however very little is known about the referral processes utilised. This presentation reported the findings of a survey investigating these cataract referral criteria.

Methods: Five-hundred-and-thirty-three of 4,272 (13%) members of the Optometrists Association of Australia responded to an emailed survey sent in April 2013. The survey included questions on demographics, professional optometric characteristics and referral criteria considerations.

Results: The majority of sampled optometrists (407/528, 77%) provided a visual acuity referral benchmark between 6/9 and 6/12. Hobbies (94%) and driving (73%) rated highest for earlier referral, whilst 'not wanting surgery' (79%) resulted in the largest proportion choosing to delay referral. Those practising in Australia's most advantaged socioeconomic areas were 2.4 times more likely to refer privately (95% CI 1.6-3.6), where surgical cost considerations were significant ($p<0.001$). Public waiting times were discussed by almost all optometrists (97%, median category 12-18 months) whereas a lower proportion (64%, median category 1-2 months) discussed private waiting times.

Conclusion: Patient-reported visual status impacted upon the overall optometric decision for cataract referral. Considerations of costs influenced choices in referral to private or public surgical services, where optometrists noted significant differences in wait-times.

DOES TRAINING IN THE USE OF MAGNIFICATION IMPROVE OUTCOMES?

Norliza Bt Mohamad Fadzil, Kerry Fitzmaurice

Introduction: Magnification is the commonest form of vision rehabilitation. Clients are usually prescribed a device and given basic instruction in its use. This study aimed to determine if training and structured practice in the use of the device would improve outcomes.

Method: Twenty-four participants who did not have macular disease or nystagmus were involved in the study. All were prescribed appropriate magnifiers, given basic instruction and allowed a two-week adaptation period. Fifteen participants received ten sessions of training the remaining nine had no further intervention. Outcome measures included reading speed, print size and activities of daily living (ADL) at baseline, 7-weeks and 6-months.

Results: Both groups demonstrated improvement on all outcome measures which were significant ($p \leq 0.05$). Maximum decrease in print size and increase in reading speed occurred between baseline and 7 weeks; further improvement in reading speed occurred at 6 months in the training group only. ADL outcomes indicated improvement in both groups; the training group at 7-weeks the non-trained group at 6 months.

The results of this study support the use of magnification devices to decrease print size, increase reading speed and to improve both self perceived and demonstrated ability to perform ADLs with training decreasing the time required.

DO CURRENT RECOMMENDATIONS FOR THE WEARING OF SUNGLASSES BY CHILDREN COMPROMISE REFRACTIVE DEVELOPMENT?

Amanda French, Devica Apriyani, Danielle Morgan, Timothy Roque, Nicola Saxton, Chii Xiang Yue, Kathryn Rose

Recommendations are often made that children should wear sunglasses when outdoors from a young age to prevent exposure to ultraviolet (UV) light. UV exposure is well established to be related to the formation of cataract and pterygia and implicated in macular degeneration. However, longitudinal studies of children have not been conducted to determine the reduction in risk of developing these conditions later in life. Exposure to sunlight has recently been shown to protect children from the development of myopia, most importantly at a young age. Animal studies have shown that the mechanism behind this protective effect is high intensity light, such as sunlight, which stimulates the release of retinal dopamine and prevents excessive axial elongation. In order to have a protective effect the light must be of sufficient intensity to elicit this response and it appears that the threshold light intensity required is approximately 10,000 lux (lumen per square metre). It is unclear whether wearing sunglasses would lower the available light intensity outdoors below the threshold required for protection and whether this could affect refractive development. This study reported the reduction in luminosity levels through various commercially available sunglasses lenses in comparison to available outdoor light intensity throughout the day.

StEPS VISION SCREENING OUTCOMES AND RESULTS: SOUTH WESTERN SYDNEY

Kamil Gorski

Between January and June 2013, over 5,000 children were screened through the StEPS program in the South Western Sydney Local Health District. The results and outcomes of these were discussed with particular emphasis on secondary screening of children identified as 'high priority and 'unable' after primary StEPS screening.

CEREBRAL VISION IMPAIRMENT: BEYOND THE OPTIC NERVE

Kylie Gouliotis

Cerebral vision impairment (CVI) is one of the most common eye conditions seen at the Royal Institute for Deaf and Blind Children Teleschool yet it is often misunderstood with devastating consequences for the child. Children with CVI can have visual acuity which ranges from normal to immeasurable however the child's functional vision is often severely affected. Unfortunately when only visual acuity is considered, children will often miss out on support and funding services.

Beyond the optic nerves and occipital lobe, the dorsal and ventral streams hold the key to identifying the visual behaviours of children with CVI. While damage to the optic nerves and occipital lobe can cause loss of visual acuity, contrast, colour and visual fields, damage to these higher visual processing areas impacts on visually guided movement, orientation, complexity, recognition and visual memory. This presentation discussed the visual behaviours associated with damage to the higher visual processing areas.

RIDBC TELESCHOOL: ENABLING PARENTS AND TEACHERS TO TAKE THE LEAD

Kylie Gouliotis

The Royal Institute for Deaf and Blind Children Teleschool utilises video conference and web-based technologies to provide support services to children with hearing and/or vision impairment who live in regional or remote areas of Australia. When working via video conference, the consultant participates as a coach to parents and teachers, guiding them through set activities which will help the children to reach their developmental or educational goals. This approach enables parents and teachers to actively participate in their child's program leading to greater ability to integrate the skills and activities into the child's life.

This presentation discussed the techniques used to engage and enable parents and teachers. Case studies demonstrated these techniques and the results of active parent and teacher participation.

THE EFFECT OF TESTING PROCEDURE ON PERIPHERAL VISION RESPONSES

Neryla Jolly

Aim: To raise awareness of the impact of different approaches to peripheral vision assessment.

Method: An initial series of cases with peripheral vision loss was presented, demonstrating the outcome of performing different test procedures. The methods of examination include: static, kinetic (stimulus presentation), assessment by central fixation compared with moving fixation during the test; awareness versus seeing the target.

Results: Some patients have a response that is the same regardless of the method used. Some patients show an improved response according to the method used.

LOSING THE 'MIDDLE MAN' IN GENETIC EYE DISEASE: THE CURRENT SCOPE OF DIRECT TO CONSUMER TESTING IN OPHTHALMOLOGY

Lisa Kearns, Maria Franchina, Seyhan Yazar, Sandra Staffieri, David Mackey, Alex Hewitt

Purpose: Providing personalised genetic information may be seen as 'empowering' with individuals taking responsibility for their own health, decisions and lifestyle choices. Although there are regulations covering genetic testing, consumers can approach Direct to Consumer (DTC) companies who provide a variety of tests, ranging from paternity and ancestry screening to genetic disease risk assessment. Such services circumvent the direct pre-test consultation; thereby removing the 'middle man', the medical practitioner or genetic counsellor. This study aims to compare DTC companies and their services who offer genetic risk assessment for ophthalmic diseases.

Methods: Using the Google search engine, DTC company web sites were scanned using the following terms: genetic test; genetic testing; genomic test; DNA test kit; direct-to-consumer genetic tests; direct-to-consumer genomic tests; and DTC Company. Those DTCs not offering testing for at least one ophthalmological condition in humans were excluded. Information obtained included whether the service was 'truly DTC', cost to the consumer, sample source, eye diseases as well as genes or variants tested. Data were collated on results, interpretation, significance and genetic counselling services provided to the consumer and whether these were updated as additional information became available.

Results: Seventeen companies were identified, however two companies were not used for direct comparison after recent company takeovers. Of the companies compared 10/15 (66.66%) were 'true' DTC companies, offering tests to a consumer without the need for a medical practitioner's input. All companies provided some level of genetic risk assessment for age-related macular degeneration. There was variation in single-nucleotide polymorphisms (SNPs) used for a given disease, with varying numbers of SNPs and loci tested.

Significance: Currently, there is marked variation in genetic screening provided by DTC companies for ophthalmic disease. Such variation in loci and SNPs screened, could lead many patients to receive somewhat different risk predictions if using multiple services. Some level of consumer protection could be ensured through regulation of current DTC services.

MANAGING LONG WAIT TIMES: THE CHW REFERRAL TRIAGE PROCESS AND OUTCOMES

Suzy King

Prior to 2008 The Eye Clinic at The Children's Hospital at Westmead accepted all referrals into the clinic. Over the years this lead to very long waiting times for appointments which became a risk to patients requiring a more urgent assessment. A referral triage process was implemented in 2008/9 and has been adjusted and adapted to suit the current demands of the clinic.

Triaging is now an important daily task that plays a big part in managing clinic numbers. The triage process along with current outcomes was discussed in detail.

HIGH PRIORITY StEPS CLINIC AT THE CHILDREN'S HOSPITAL AT WESTMEAD

Lindley Leonard, Louise Brennan

The Children's Hospital at Westmead runs a StEPS high priority clinic, receiving referrals of children throughout NSW who have documented visual acuity of less than 6/18 on StEPS screening. An overview of our protocol, procedures and outcomes will be discussed and a number of interesting cases highlighted.

SMART PHONE-ASSISTED ANTERIOR SEGMENT SLIT-LAMP PHOTOGRAPHY

Minh Anh (Andy) Ly

Digital photography can be a useful tool for the diagnosis and monitoring of anterior segment diseases. Photography provides an objective reference of the state/progression of the disease instead of relying upon the subjectiveness of the ophthalmologist's recordings. However, the high costs involved in the purchase and maintenance of these machines can be a deterrent to clinics utilising such tools.

Alternatively, the modification of slit-lamps by mounting a smart phone can provide a more readily available method of anterior segment photography. When used in the correct manner, smart phone cameras are a capable substitute.

This presentation provided a practical and step-by-step guide to smart phone-assisted slit-lamp photography.

DOES TEACHING APPLANATION TONOMETRY ON A SIMULATED EYE IMPROVE STUDENTS' LEARNING OF AN IMPORTANT CLINICAL SKILL?

Stephanie Mauger, Meri Vukicevic, Stuart Keel, Nick Stonem

Background: Goldmann applanation is currently the gold standard of intraocular pressure measurement and is a clinical skill used frequently by orthoptists. It is a difficult skill to teach students as the risk of corneal abrasion is high. In 2013 the use of simulation was introduced into the curriculum with a focus on assessing novice students' perception of risk, ease of learning and ability to perform the skill.

Current literature regarding the use of simulation in training programs has not been thoroughly investigated. Novice students welcome the introduction of simulation, generally reporting a direct correlation with increased confidence when performing otherwise difficult or dangerous tasks. However, teachers and supervisors report students over-compensating the worth of this self-perceived learning benefit.

The aim of this project was to assess the student perception of difficulty when learning the inherently dangerous skill of applanation tonometry and subsequent ability after being trained via simulation in comparison to being trained with the use of a human eye. Furthermore, perceptions of difficulty from a previous cohort of students (2012) were compared to current students (2013) analysing the impact of simulation on current applanation tonometry curriculum.

Methods: Methodology used to measure outcomes included anonymous surveys, formal and informal class assessments and focus groups.

Results: Early results suggest that students welcome the use of a simulated eye when first learning the skill of applanation tonometry.

OPTIMISING REFRACTIVE OUTCOMES FOR COMBINED PHACO/VITRECTOMY

Rachel McIntosh, Justine Wilks, Sophie Rogers, Wilson Heriot

Purpose: To identify the optimal refractive outcome for combined cataract and vitrectomy patients.

Method: A retrospective audit was undertaken for 161 patients who underwent combined vitrectomy and cataract surgery and did not have axial length (AL) adjusted, and for 47 patients where the AL was adjusted for the potential shortening by adding OCT measured macular thickness beyond the normal ~200u.

Results: There was no significant difference between target spherical refractive outcome and actual spherical refractive outcome after manual AL adjustment. The target refraction and actual postop refraction however, differed significantly in the non-adjusted eyes with a mean difference of -0.17DS ($p=<0.001$) and a significant difference was also seen between the two groups ($p=0.013$). The target spherical refraction using the lens selected after manual AL adjustment and the lens selected prior to AL also differed significantly ($p=0.0002$) with a median difference of +0.12 DS (IQR +0.03 to +0.42).

Conclusion: Combining cataract and vitrectomy surgery secures excellent visibility and prevents subsequent surgery, however the refractive outcomes can potentially be compromised by AL aberrations from abnormal reflectivity from surface membranes. This audit has demonstrated a superior refractive outcome after manual AL adjustment compared with the standard IOL power used for cataract surgery alone.

CAN THE IMPACT OF VISION IMPAIRMENT ON A CHILD'S DAILY FUNCTIONING BE MEASURED?

Philippa Miller, Sue Silveira

The DisabilityCare inclusion criteria use the impact of disability on the individual's daily functioning to determine eligibility. The National Disability Insurance Scheme Act 2013 acknowledges that the individual's age and disability will determine the assessment tools used to ensure that they are relevant to the individual's situation. While visual acuity and visual field results are easier to quantify and compare, they are not the most relevant indicator of an individual's daily visual functioning. It can be assumed at this stage that functional vision assessments will play an integral part in applying for funding and support through DisabilityCare.

DisabilityCare discusses the important role that early intervention plays in reducing the support required later in life. Therefore funding will focus on improving the child's ability to perform activities of daily living. The ability to reliably determine a child's level of functional vision and apply it to inclusion criteria was questioned, particularly in the presence of additional disabilities. A literature review was carried out to explore the question: How can the impact of vision impairment on daily functioning be measured in a paediatric vision-impaired population?

'HELP US HELP YOU': WHAT PATIENTS CAN DO TO HELP THEMSELVES

Julie Morrison

There is an ever growing body of evidence about risk factors for eye disease. Although some of these, such as age, gender and genetics, cannot be changed, there are a significant number of 'modifiable' risk factors that can reduce the chances of disease occurrence and progression. People with diabetes, for example, are less likely to get sight-threatening retinopathy if they have good control of their diabetes than those with poor control.

As orthoptists, our focus is often directed at what we can do for the patient in the clinic. However, educating patients about the modifiable risk factors involved with their disease can empower them as well as improving their chances of gaining the best visual outcome. Orthoptists are well placed to deliver and reinforce these messages.

This presentation gave some straightforward tips, based on the current evidence, on what patients can do to achieve the best outcome for their eyes.

THE RESIDENTIAL OCULAR CARE TRIAL: METHODOLOGY AND PRELIMINARY RESULTS

Theona Nicolaou, Rachel McIntosh, Jonathan Jackson, Lauren Kharsas, Ecosse Lamoureux

Purpose: To evaluate the clinical, economic and patient-centred effectiveness of a novel eye care model for visually impaired people in residential care facilities.

Method: A prospective, multi-centred RCT comparing Residential Ocular Care (ROC) with usual care. Those with distance vision <6/12 and/or near vision ≤N8 will be invited to participate in ROC. The four interventions include the correction of refractive error, cataract surgery, low vision rehabilitation and referral to an ophthalmologist. Assessments include visual acuity testing (primary outcome); residential care vision-specific QoL; residential care-specific daily functioning; overall and vision-specific QoL; falls; depression and eye care utilisation (secondary outcomes). A cost-effectiveness analysis will be conducted. Four-hundred participants will be recruited from approximately 14 locations. A feasibility study was undertaken at Barwon Health residential care facility.

Results: Our feasibility study included 48 residents, 70% (33) were considered to have sufficient cognitive functioning. Of these 97% (n=31), 42 % (n=13) male, agreed to have a vision assessment. Of these, 80% (n=25) were considered to have either distance vision <6/12 and/or near vision N8 or worse. Of these 80%, 19 visual aids were provided, three participants were referred for cataract surgery, five to ophthalmic care and three to low vision rehabilitation.

Conclusion: Our preliminary data indicate that ROC is feasible and well accepted by residential staff and participants. We hypothesise it will improve vision, quality of life, functional abilities and depression in this population.

ADJUSTABLE GLASSES FOR CHILDREN WITH CLIP-ON FRAMES

Madeleine Scavone

There is an apparent gap in the market for children's glasses that are cost-effective yet still fit the child's face well. To overcome this, a pair of glasses has been designed by the presenter that ultimately grows with the child's face to offer a tailored fit for the wearer, whilst being more economical for the parents, with the child ideally only needing one pair of glasses their whole life. The use of these adjustable glasses guarantees the wearer will always look through the lens of the glasses to promote normal visual pathway development, eliminating the risk/development of amblyopia from poorly fitting glasses. The novelty of clip-on frames entices the child to wear their glasses, with a variety of different colours and styles. These glasses will hopefully eliminate the pressure on parents to find a pair of glasses that fits the child well yet is still appealing to the child, a problem that is often solved with a compromise of one over the other. When the child grows, the glasses can easily be expanded to fit the face, and a new frame clipped on top.

THE MORE THINGS CHANGE, THE MORE THEY STAY THE SAME: DELAYED DIAGNOSIS IN RETINOBLASTOMA

Sandra Staffieri, Lisa Kearns, Alex Hewitt, James Elder, John McKenzie, David Mackey

Retinoblastoma (RB) is the most common ocular cancer in children. Caused by somatic or germline mutations in the RB1 gene, it occurs sporadically or can be inherited. Leukocoria is the most common presenting sign, followed closely by strabismus and family history. Despite occasional newspaper and magazine articles, the symptoms and signs are often ignored until the disease is advanced. Both public and health worker awareness of these signs is poor, with early symptoms often ignored. Early diagnosis provides the best opportunity to maximise visual outcomes, improve globe salvage rates and save lives. Research programs to improve awareness and reduce delays in diagnosis were discussed.

PREVALENCE OF STRABISMUS IN A YOUNG ADULT POPULATION

Seyhan Yazar, Alex Hewitt, Jenny Mountain, David Mackey

Purpose: To determine the prevalence of strabismus in a young adult population with Northern European ancestry.

Methods: Offspring of the Western Australian Pregnancy Cohort (Raine) Study participants have been followed from birth to young adulthood. At the age of 20 years, for the first time 1,344 participants had a comprehensive eye examination including visual acuity and a detailed orthoptic assessment. Amblyopia is defined as a difference of more than two LogMAR lines between the eyes in best-corrected visual acuity.

Results: Complete data was available for 1,314 participants. Strabismus was diagnosed in 56 (4.3%) participants. No statistically significant association was found between strabismus and gender (p=0.91). The exotropia:esotropia ratio was 1.24. Of the participants with strabismus, five (9.8%) had amblyopia.

Conclusion: The prevalence of strabismus was similar to other populations.