Selected Abstracts from the Orthoptics Australia 68th Annual Scientific Conference held in Canberra 20 to 22 November 2011

PATRICIA LANCE LECTURE ON BEING AN ORTHOPTIST

Neryla Jolly

The aim of the presentation was, through the history of the orthoptic profession in Australia, to encourage strong identification with the orthoptic role; ongoing improvement of patient care by innovation and research; transmission and publication of the orthoptic role and encourage new ventures. The definitions of an orthoptist were reviewed and a simple outcome was posed. Information regarding the role of an orthoptist was reviewed from manpower data collected between 1940 and 2000, and information from transactions and journals of Orthoptics Australia between 1944 and 2010. The role was shown to fall into four areas – conventional practice, ophthalmic practice, rehabilitation, and a combination area which included vision screening, treating learning disability, sport assessment, driver testing, ergonomics and community health.

The outcome revealed that orthoptists in Australia are active in patient care, are enquiring, problem solving, innovative and adaptable.

MY WORLD ENDS AT THE TIPS OF MY TOES, FINGERS AND NOSE – THE DEVELOPMENTAL JOURNEY OF A VISUALLY-IMPAIRED OR BLIND BABY

Louise Brennan

Vision is the most functional sense for development. It holds a central place in how we learn the most information from our environment. Vision is the main provider of information about threats and opportunities in the world and to a large extent it drives behaviour. If vision is impaired it has the potential to impact on the fine motor, gross motor, social, emotional, communicative and cognitive development of the child. The developmental milestones of the sighted child compared to the visually-impaired or blind child along with case examples will be used to highlight the obstacles faced in reaching developmental milestones. The role of early intervention services and how all orthoptists can help will be discussed.

BROKEN HILL, A HEALTH WORKFORCE AUSTRALIA INITIATIVE TO INCREASE AND DIVERSIFY STUDENT CLINICAL PLACEMENTS

Michelle Courtney-Harris, Angelique Antoniou, Judy Chen, Matt Jacobs, Sasha Maroon, Elton Phung, Jessica Schenk

The federal Health Workforce Australia (HWA) taskforce has been implementing clinical education funding grants to assist in the training of medical, nursing and allied health personnel. In 2010, a grant to the Faculty of Health Sciences and the University of Sydney's Department of Rural Health in Broken Hill, helped establish orthoptic clinical placements to provide vision screening in primary schools in Broken Hill and surrounds. In discussion it became evident that there were no systematic screening services being conducted in Broken Hill.

In consultation with local optometrists and visiting ophthalmic specialists, a service learning fieldwork placement for final year orthoptic students has been piloted in September 2011. Because there is no direct orthoptic support, a number of strategies were employed to support the students while on placement. These included parent information and consent letters, screening protocols, weekly video/tele-conference support, referral protocols and standardised referral letters. Preliminary results from the vision screening of children aged 4 to 7 years will be reported.

THE 'MISSING' NUMBERS IN THE STATEWIDE EYESIGHT PRESCHOOLER SCREENING (StEPS) 2010 IN THE SYDNEY SOUTH WEST AREA HEALTH SERVICE (SSWAHS)

Katrina Cramp, Sue Topham

The presentation is an exploration of the concern from the orthoptists, the StEPS Coordinator and the Deputy Director of Child and Family Services Community Health, that approximately twenty percent of children eligible for StEPS vision screening in SSWAHS were missed during 2010, despite many innovative attempts by all staff members to provide access to the StEPS screening service. Across the area there were a number of disadvantaged schools selected for StEPS screening to be offered to kindergarten children who had not been captured by the StEPS program in 2010. In the disadvantaged schools targeted, there was an overwhelming acceptance by the principals of the offer. Information pamphlets, letters and consent forms were distributed to the parents of kindergarten children and screening commenced.

It became apparent that there were a significant number of children who had not been screened in 2010, and the uptake of the offer was warmly received by parents and caregivers. The results of this primary screening done over seven targeted schools, screening 194 children, will be presented.

Conclusions drawn from this experience will be highlighted against the current model for StEPS screening, recommendations made, and discussion undertaken as to how best capture this twenty percent of children in 2011.

OCULAR COMPLICATIONS ASSOCIATED WITH CRANIOSYNOSTOSIS IN A PAEDIATRIC POPULATION

Stephanie Crofts

Craniosynostosis is a congenital condition in which one or more of the cranial sutures of the skull fuse prematurely during embryonic life. It occurs in approximately 1 in 2,000 births and can occur in isolation or as part of a syndrome. Ocular complications are associated with craniosynostosis, including strabismus, amblyopia, exophthalmos, papilloedema and optic atrophy. A review of children who presented to the eye clinic at The Children's Hospital at Westmead with craniosynostosis will be discussed.

NEURO-IMAGING THE VISUAL PATHWAY – BASICS FOR ORTHOPTISTS

Caroline Fang

This presentation will educate the audience on the basics of neuro-imaging of the visual pathway, including an overview of CT and MRI, which scan to order, how to look at a scan and what can be seen. Some case examples will be shown.

REVIEW OF ACRYSOF® CACHET™ IMPLANTABLE LENSES IN REFRACTIVE PATIENTS

Jane Farley

Purpose: To assess the visual outcomes of correcting moderate to high levels of myopia using the Acrysof® Cachet™ Lens.

Methods: This is a retrospective case series comprising 38 eyes of 22 patients who presented for refractive surgery in a private ophthalmology clinic setting, from December 2009 to September 2011. All surgery was performed by the one surgeon at the same day surgery. A preoperative and postoperative standard refractive exam was performed, including best-corrected visual acuity (BCVA), uncorrected visual acuity (UCVA), subjective refraction and specular microscopy. A comparison of BCVA, UCVA and refraction were performed at three weeks, three months, six months and yearly post operation. Patients' subjective comments on their visual quality compared to preoperatively was also noted. Any operative or postoperative complications were also noted.

Results: Final analysis of this cohort is currently being undertaken and will be presented, however preliminary analysis shows a strong correlation between the targeted correction and the postoperative outcome.

MODIFIED VERSIONS OF ECCENTRIC VIEWING TRAINING PROGRAMS SUITABLE FOR CHILDREN

Kerry Fitzmaurice, Norliza Fadzil

Background: Eccentric viewing is an established strategy to ameliorate the impact of macular vision loss. However the focus of this training has been toward older adults with age-related macular degeneration or young adults with juvenile forms of macular degeneration and Leber's optic atrophy. A study has been undertaken to consider the efficacy of a range of vision rehabilitation strategies with children, including eccentric viewing. To provide an appropriate training program for eccentric viewing with children, suitable images and activities needed to be selected.

Method: An age-appropriate series of images and activities were selected. The images and activities were incorporated into a PowerPoint presentation format for validation. One-hundred-and-twenty fully-sighted children aged 7 to 12 years were recruited into the validation study.

Results: Four of the twenty-six images selected for validation could not be reliably identified or were not interesting to the participants and were therefore not used in the final study. Activities were based on matching or finding games and were validated in terms of understanding, interest and visual discrimination. All of the activities were selected.

Discussion and conclusions: The validation process revealed some interesting data in relation to the impact of cultural beliefs, prior knowledge and concepts on the ability of participants to identify images and their responses to them. These observations are discussed in relation to the literature. The selected images and activities were combined to form training activities for the vision-impaired participants in the impact of rehabilitation study.

LIGHT: ITS MEASUREMENT AND APPLICATION TO FUTURE STUDIES FOR THE DEVELOPMENT OF MYOPIA

Amanda French, Kathryn Rose

Recent studies have shown that time spent outdoors is protective for the development of myopia, and intervention programs to increase time spent outside have commenced. However, a reliable measure of light exposure is still required.

We compared two measures of light exposure; a week-long daily light exposure diary and a data logger (HOBO UA-002-64, Onset Computer Corporation, Cape Cod, US) measuring luminosity (LUX), to determine the most appropriate tool for future myopia studies.

A highly motivated population of 48 university students participated in the study, both wearing the data logger and completing the diary for seven consecutive days. The diary was modified from one developed for an intervention study in Singapore. Participants recorded all activities performed throughout the day including whether they were indoors or outdoors. At completion, participants attended focus groups to discuss problems and possible discrepancies they noted between the two measures. The measures from the data logger and the questionnaire were compared in relation to the qualitative data obtained from the focus groups.

The differences in LUX measured indoors (mean 600 LUX) and outdoors (mean 25,000 LUX) were high. Analysis of responses from focus groups indicated that the diary was time-intensive and needed to be filled out continuously through the day to ensure accuracy. It was also noted that discrepancies in the two methods may occur when using transport. The data logger may be less onerous and prove a more reliable measure of light exposure.

COMPARISON OF THE DISTRIBUTION OF REFRACTION AND OCULAR BIOMETRY IN EUROPEAN CAUCASIAN CHILDREN LIVING IN NORTHERN IRELAND AND SYDNEY

Amanda French, Kathryn Rose

Aim: The comparison of age and ethnicity-matched samples from different locations can reveal important information about the role of environment and genetics in the development of refractive error. This study compares the distribution of refraction and ocular biometry in European Caucasian children aged 6-7 and 12-13 years living in Sydney and Northern Ireland (NI).

Methods: All children had a comprehensive eye examination, including cycloplegic (cyclopentolate 1%) autorefraction (Sydney; Canon RK-F1, NI; Shin-Nippon SRW-5000) and ocular biometry (IOLMaster, Carl Zeiss). Hypermetropia was defined as a right spherical equivalent refraction (SER) of ≥+2.00 dioptres (D), myopia as ≤-0.50 D and astigmatism as a cylindrical error of ≥1.00 D.

Results: The mean SER was similar at age 6-7 years ($p=0.9$), however, at 12-13 years, children in NI had a significantly less hypermetropic mean SER (+0.66D) than children in Sydney (+0.83D, $p=0.008$). The prevalence of myopia, hypermetropia and astigmatism was significantly greater in children living in NI than Sydney at both ages (all $p\leq0.03$). Consequently, distribution of refraction while highly kurtotic (peaked), was less so in NI (kurtosis, 6-7 yrs, 7.2; 12-13 yrs, 5.9) than Sydney (6-7 yrs, 15.0; 12-13 yrs, 19.5).

Conclusion: European Caucasian children in NI have a greater prevalence of refractive errors, in particular astigmatism, when compared to children living in Sydney. In addition, the lower kurtosis of the distribution in NI could indicate less robust emmetropisation mechanisms compared to children in Sydney. This may be in part the result of less daylight hours and lower light levels in NI compared to Sydney.

KERATOCONUS: BEYOND THE CORNEAL TOPOGRAPHER

Chris Hodge

Keratoconus is a progressive corneal disease which leads to thinning of the corneal stroma. As the condition increases the patient may be impaired by increasing myopia and irregular astigmatism. Traditionally, diagnosis is confirmed by the use of corneal topography. Developments in genetic and proteinomic research may assist an early diagnosis and allow for implementation of treatment earlier, increasing the potential benefits for patients. Novel research results will be discussed.

UNSYNCHRONISED EYELID BLINKING: A CASE STUDY

Bronwyn Jennings

A case study of a 4-year old child presenting to an orthoptic secondary screening clinic with unsynchronised eyelid blinking is presented. The possible aetiology of the unsynchronised eyelid blinking will be discussed as well as the spontaneous resolution of the condition.

UNDERSTANDING STURGE-WEBER SYNDROME AND THE RELATED OCULAR COMPLICATIONS

Suzy King

The eye clinic at The Children's Hospital Westmead sees a large variety of paediatric conditions each year. Sturge-Weber syndrome is a rare congenital disorder that can have significant systemic and ocular complications.

Sturge-Weber syndrome, also known as encephalofacial or encephalotrigeminal angiomatosis, is a neuro-oculocutaneous syndrome that is characterised by facial cutaneous, meningeal and ocular haemangiomas. The most recognisable clinical feature is a haemangioma of the face, or naevus flammeus, commonly referred to as a 'port wine stain'. This usually presents unilaterally, however the location on the face and whether or not there is involvement of the brain is important in determining the risk of other symptoms of the condition, including epilepsy and glaucoma.

The classic ocular findings include choroidal haemangioma and glaucoma, most commonly unilateral and ipsilateral to the port wine stain. Choroidal haemangiomas usually remain stable, not requiring treatment, however they may lead to cystoid macular oedema and exudative retinal detachments. Glaucoma, involving an increase in intra-ocular pressure, occurs in up to 70% of people with Sturge-Weber syndrome and often requires surgical intervention.

Sturge-Weber syndrome requires a multidisciplinary approach for treatment and management. The condition will be discussed in detail along with treatment/management strategies, followed by a case study.

FUNDAMENTALS OF VISION SCREENING: GETTING IT RIGHT

Jody Leone, Kathryn Rose

Visual Acuity (VA) is the gold standard ophthalmic test and the primary method of detecting ocular conditions in screening programs. VA norms have long been established for adults, but are less certain in children. We aim to provide population-based normative data for monocular visual acuity, in children aged 6 to 78 months.

In the Sydney Paediatric Eye Disease Study, VA was measured using Teller Acuity Cards II (TACII) (≥6 months), the Amblyopia Treatment Study (ATS) single surround HOTV letters (≥24 months), and LogMAR LEA, HOTV or ETDRS charts (≥30 months). Normative VA measures were analysed after excluding children with ophthalmic abnormalities or significant refractive error.

Data was available for 499 children using LogMAR charts, 934 children using ATS and 544 using TACII binocularly and 444 monocularly. VA improved with age, with the most rapid change occurring from 12 to 24 months of age. After this age, the rate of improvement slowed. VA approached adult normal levels in children ≥54 months. A one-line difference in VA is noted with the ATS in comparison to the LogMAR charts. In the ages where the VA tests overlap (24-40 months) the differences in VA between resolution and recognition acuity is evident.

Early rapid improvements in VA are likely to be due to both the emmetropisation of refractive error and maturation of the retina and visual pathways in the first year of life. Differences in VA measured by the three tests may reflect differences in the cognitive capacities of children.

COMPLICATIONS AND CONSIDERATIONS OF REMOTE AREA WORK

Aimee Leong

The Kimberley region has a population of more than 40,000 people; of this 47.3 percent are indigenous people. This indigenous population demographic is considered unique compared to around 3.5 percent of the Western Australian population and 25 percent in the Northern Territory. There are approximately 200 indigenous communities across the Kimberley and over 34 indigenous languages spoken. In this region there are three main hospitals: Broome, Derby and Kununarra where patients are consulted and operated on; as well as smaller hospitals in Fitzroy Crossing and Halls Creek. This presentation aims to discuss the challenges of rural work experienced in the Kimberley Region as well as the benefits of having an orthoptist as part of the ophthalmology team in remote area work.

EXAMINING NYSTAGMUS IN CHILDREN

Wendy Liang

Concerned parents often bring in young children wondering why their eyes are 'wobbly' or 'keep shaking' and it frequently surprises them to learn that these pendular or jerky movements are not part of a normal development process. So what are the causes of nystagmus in young infants?

Whereas acquired nystagmus in older patients brings to mind neurological causes or medications, nystagmus in early childhood may be caused by a variety of eye conditions. These include anterior segment pathology such as cataracts, or posterior segment pathology including retinal dystrophy, albinism or optic nerve pathology. Nystagmus may also occur in children with multiple disabilities such as in Down syndrome.

A review was conducted in a private paediatric ophthalmic practice of children who presented with nystagmus from January to October 2011, looking for the most common causes of nystagmus. By excluding ocular and neurological causes, many children were found to have congenital motor (idiopathic) nystagmus. Other causes will also be discussed as well as the management plans for the best possible vision.

CONVERGENCE PARESIS

Nicole Martinovic

A case study of a 9-year old child with a loss of convergence is presented. The signs, symptoms and treatment are discussed, along with the differential diagnosis and aetiology.

CYCLOPLEGIC REFRACTION IN ADULTS

Nhung Nguyen, Ross Fitzsimons

Purpose: To determine if cycloplegic refraction in adults is necessary to identify true refractive error prior to vision correction with laser surgery.

Methods: This retrospective clinical audit compared pre-cycloplegic refraction with post-cycloplegic refraction using two doses of cyclopentolate 1% and waiting 45 minutes. All refractions were performed subjectively by the one clinician. The shift of refractive error with cycloplegia was then compared in two age groups (20-40 years and 40-60 years) to determine if there is a correlation with age.

Results: The prevalence rates of refractive changes as a spherical equivalent post-cycloplegia equal to or greater than 0.5, 1.0, 2.0 and 3.0 dioptres (D) were 60.98%, 30.08%, 6.50% and 2.44% respectively. With these definitions within their age group, there seemed to be no direct relationship between the amount of cycloplegic shift and age.

Conclusions: The results obtained suggest that the normal reduction of accommodative ability observed with age in distance refraction is not always the case. This raises the question of what other underlying cause can contribute to the refractive hypermetropic shift in refraction post-cycloplegia in adults. The finding of more than 39% of patients having 1D or more of hypermetropic shift post-cycloplegia deems it necessary to perform a cycloplegic refraction on patients prior to laser vision correction.

GRADUATE ENTRY MASTERS: BRIDGING KNOWLEDGE

Jean Pollock, Connie Koklanis

The two-year Master of Orthoptics was introduced at La Trobe University in Melbourne this year. In order to support the Graduate Entry Masters (GEM) students, an orthoptic bridging program was designed and implemented. GEM students were surveyed with a questionnaire and attended a Focus Group Interview after completing the one month bridging program and before joining the existing undergraduate students. An additional questionnaire was completed by the GEM students at the completion of their first year to ascertain their views of the bridging program upon reflection of their studies thus far. We aimed to evaluate the effectiveness of a bridging course. The preliminary outcomes of this study will be presented.

StEPS – CLINICAL FINDINGS FROM SYDNEY HOSPITAL AND SYDNEY EYE HOSPITAL 2008-2011

Chantelle Robertson

Statewide Eyesight Preschooler Screening (StEPS) was introduced by the NSW Department of Health in 2008. StEPS is a vision screening program for four-year old preschool children. The Orthoptic Department at Sydney Hospital and Sydney Eye Hospital is involved in the assessment and management of StEPS referrals in the south-eastern Sydney local hospital district. The poster presents the clinical findings of the children referred from the StEPS program between October 2008 and September 2011. It illustrates the number of patients referred and treated, diagnoses and the type of treatment used.

MUCOPOLYSACCHIRIDOSES AND THE ASSOCIATED OCULAR COMPLICATIONS

Katie Scanlon

The ophthalmology and orthoptic departments at The Children's Hospital at Westmead have recently commenced a research project for children with mucopolysaccharidoses (MPS). We aim to determine the prevalence and severity of ocular complications among this group of children across Australia. Financial assistance and support has been received from Genzyme and Biomarin in order to conduct this research.

The MPS disorders (classified from MPS I to MPS IX) are rare inherited metabolic diseases caused by a defect in the genes coding for specific lysosomal enzymes. These enzymes break down complex sugars called glycosaminoglycans (GAGs) within the body, a process necessary for normal growth and tissue maintenance. Lack of these enzymes leads to a build-up of GAGs within various tissues and organs, resulting in irreparable damage.

Deposition of GAGs occurs extensively in the eye, in particular the cornea, sclera, retina and optic nerve. This leads to typical corneal clouding seen in several different types of MPS disorders, which can significantly reduce vision. Deposition within the retina may also occur, causing retinal degeneration and further vision loss. Deposition of GAGs in the angle of the anterior chamber or narrowing of the angle can result in glaucoma. It is known that the GAGs deposit within the optic nerve, compressing the optic nerve from within. Marked scleral deposition may also occur externally compressing the optic nerve, as can deposition within the optic nerve sheath. If this is coupled with a rise in intracranial pressure, marked vision loss may occur and in some cases, blindness may ensue. Other contributing factors to the optic neuropathy include glaucoma and retinal degeneration.

MPS disorders will be discussed as well as results from our current, ongoing research project.

THE AUSTRALIAN CHILDHOOD VISION IMPAIRMENT REGISTER – A 2011 UPDATE

Sue Silveira

The Australian Childhood Vision Impairment Register is sponsored by the Royal Institute for Deaf and Blind Children and is the first nation-wide register which is gathering data on children with vision impairment who live in Australia. The Register collects data from the child's family and the child's eye professional. This ensures each child's situation is comprehensively represented, including their ongoing medical, educational and low vision needs.

This paper will present an update on the progress of the Register and key findings which are providing a picture of childhood vision impairment in Australia. Additional projects supporting the Register such as the VI Family Network will also be discussed.

VISION SCREENING IN THE SOLOMON ISLANDS

Sue Silveira

This presentation will describe a project funded by the AusAID Avoidable Blindness Initiative and managed by Foresight Australia. The project's objective was to upgrade the National Vision Centre in the Solomon Islands. A central component of the project was the establishment of a community-based vision screening program for children aged between the ages of 0 and 12 years, which Foresight Australia engaged the Royal Institute for Deaf and Blind Children to design and implement. The project was two-fold, firstly to design a vision screening framework which would be acceptable for local implementation; and secondly, to deliver a 'train the trainer' course to educate participants to eventually train Solomon Island health workers to become competent childhood vision screeners.

The challenges of education and delivery of health services in an environment of limited resources will be discussed. A preliminary outcome from recent Solomon Islands childhood vision screening conducted by the course participants is also presented.

A PARADIGM SHIFT FROM 'TOUCH' TO 'NO TOUCH' SURFACE LASER VISION CORRECTION

Kathleen Suarez, Ilan Sebban

Purpose: To evaluate outcomes of the TransPRK ('no touch') versus PRK ('touch') techniques using the Schwind Amaris laser.

Methods: A clinical study of 75 consecutive eyes for each PRK and TransPRK group were treated for myopia (mean spherical equivalent (SE) -3.81 D), performed by a single doctor, using the ORK-CAM software module and aberration-free protocol. Patients with SE <-1.25 D, previous PRK, large prescriptions (>5.00 D) or thin corneas were excluded from the study. The length of surgery time was recorded on each patient's treatment sheet. Pain was registered at 1 day and 3 days postoperatively on a pain scale from 1 to 4 (1=great recovery to 4=bad recovery). Patients attended their 4-day postoperative check-up and were objectively assessed. Outcomes were evaluated at 1 week, 1 month and 3 months on the progression of their visual acuity.

Results: TransPRK performed faster with minimal preparation and an absence of instruments, whilst PRK involved more preparation and the use of debriding instruments prior to ablation. TransPRK patients reported a mean score of 2 on the pain scale, whilst PRK patients averaged a score of 3. The average epithelial healing time was 3.8 days for TransPRK versus 4.1 days for PRK and was statistically significant (p=0.003). The mean spherical equivalent refraction for all participants at one week was -0.16 D, and at 3 months -0.07 D.

Conclusions: Uncorrected visual acuity over time showed comparable results for both groups. TransPRK treatments proved to be significantly faster, less painful, with quicker epithelial healing resulting in more accurate refractive outcomes.

SAME & DIFFERENT: CASES OF IDENTICAL TWINS WITH INTERESTING OCULAR FINDINGS IDENTIFIED BY THE STATEWIDE EYESIGHT PRESCHOOLER SCREENING (StEPS) PROGRAM, SOUTH EASTERN SYDNEY LOCAL HEALTH DISTRICT

Melinda Symyniuk

Several sets of identical twins were highlighted as being 'interesting cases' as part of the StEPS program in the south-eastern Sydney local health district. The presentation will outline the findings of a few of these paediatric cases. The first cases discuss Twin I with the presentation of marked unilateral reduced visual acuity and strabismus, and Twin II with normal presentation. The second cases include 'mirror image' identical twins, both preschoolers having a constant exotropic strabismic deviation occurring in the opposite eye to each other. The third cases document identical twins with evidence of having similar ocular pathology. Along with the presentations and discussion of clinical findings, the challenges faced by clinicians when working with identical twins and their families in the community health setting will be considered. The cases serve to highlight the varied ocular findings noted with identical twins, aiding the awareness of these clients as being unique individuals, rather than simply being 'the same'.

IRIS INDIGENOUS AND REMOTE EYE HEALTH SERVICE FUNDING FOR ORTHOPTISTS

Angus Turner, Sandra Oates

The Pilbara region was the site of the first IRIS project based in Karratha and Roebourne Aboriginal Medical Service. This federal government initiative involved an eye team setting up a new remote eye health service with infrastructure for surgery and clinics. The orthoptist was included as an integral part of the eye service team. The role has varied challenges and rewards which will be demonstrated in this presentation. New orthoptic roles involving tele-ophthalmology services for rural areas will also be discussed.

EVALUATING THE EFFECTIVENESS OF AN E-LEARNING RESOURCE IN THE TEACHING OF VERTOMETRY TO SECOND-YEAR ORTHOPTIC STUDENTS

Suzane Vassallo

Vertometry is a necessary technical skill for orthoptic students to learn. In the Bachelor of Health Sciences/Master of Orthoptics program, all students are introduced to vertometry in the first semester of second year. Traditionally, vertometry has been taught over multiple practical classes where students (who work in pairs in a class size of about 25 students) are firstly introduced to the various components of the instrument. They then, over the course of about two to three weeks, work their way through measuring and recording various lens types.

While students report that they enjoy learning about how to use the vertometer, in recent subject evaluations, many have indicated that there is a lack of assistance provided to them during practical classes. More specifically, they have indicated their preference for smaller group sizes to enable the demonstrator to provide more individual assistance. In order to address these concerns, an on-line DVD entitled 'Understanding Vertometry' was developed as a resource for second-year students who undertook vertometry for the first time in 2011. All students were required to watch the DVD prior to attending their practical workshops. This presentation will discuss the differences in learning outcomes when vertometry is solely taught using the traditional practical approach versus blended learning.

THE EFFECT OF INTERLINE SPACING ON READING SPEED IN PATIENTS WITH AGE-RELATED MACULAR DEGENERATION

Meri Vukicevic, Elizabeth Baglin, Lauren Ayton, Chi Luu

Introduction: Difficulty reading is a common complaint of people with central vision loss. The crowding phenomenon in the peripheral retina is thought to contribute to slower reading in these patients. Some studies suggest that increasing the interline spacing when presenting text to patients with central vision loss above the standard 1x spacing improves reading speed and reading ability but findings are inconclusive.

Methods: Participants with age-related macular degeneration were recruited and asked to read passages of text at interline spacing of 1x, 1.5x and 2x. The size of their macula scotoma was mapped using a microperimeter, their eye movements tracked using an infra-red eye tracker and reading speed and word accuracy measured.

Results: Study findings will be presented.

WESTERN AUSTRALIAN BIRTH COHORT: DESIGN AND METHODOLOGY FOR A POPULATION-BASED STUDY OF OCULAR BIOMETRY AND DISEASE

Seyhan Yazar, Hannah Forward, Charlotte McKnight, Alex Tan, Alla Soloshenko, David Mackey

Purpose: The Raine Eye Health Study (REHS) will establish the prevalence of eye diseases and define ocular biometry in a young adult population in Western Australia. This presentation summarises the rationale and study design of REHS including recruitment, assessments and retention strategies.

Methods: The REHS benefits from an existing pregnancy cohort in Western Australia. Participants were initially recruited at 18 weeks gestation from the state's largest maternity hospital. Participants have been examined two-yearly by medical researchers in a wide variety of specialties including cardiovascular, metabolic and respiratory. In 2010, the members of Raine cohort were invited to attend a comprehensive eye assessment and provide DNA sampling for genetic analysis. In addition, participants were asked to complete questionnaires on their general, ocular and family history.

Results: A total of 1,188 participants were assessed in a 17-month period: 49.1% females and 50.9% males. The majority of participants (86.2%) had both Caucasian parents.

Conclusion: The REHS design and methodology will ensure valid findings on ocular development for comparison with other population-based studies of eye disease. The study will establish the prevalence of eye disorders in a large sample of young Australian adults. The study will also investigate the role of genes and environment in refractive error, strabismus, amblyopia, pterygium and keratoconus.