

**Name:** Dr Ehsan Vaghefi  
**Presentation title:** Updates on Ocular Imaging

**Abstract**

The field of ophthalmic imaging is being revolutionized by the introduction of novel modalities. These advances include new generation swept source optical coherence tomography (SS-OCT) and OCT angiography (OCT-A), ophthalmic magnetic resonance imaging MRI and retinal perfusion MRI (ASL). Furthermore, new inexpensive imaging devices (such as the ODOCS smartphone videoScope) have just been introduced to the market in order to deliver eye healthcare to remote and least developed societies. The availability of these new modalities means that optometrists can now access unprecedented structural and functional ocular information, in order to guide their clinical diagnosis. In this presentation, I will provide an overview of commercially available cutting-edge ophthalmic imaging modalities, from a bioengineering perspective.

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**Name:** Hannah Kersten  
**Presentation title:** Clinical Grand Rounds: Neurodegenerative Disease

**Abstract**

Chronic neurodegenerative conditions such as multiple sclerosis often present with ocular signs and changes in vision. However, there are also ongoing changes in the visual system; both in structure and function which require monitoring. This talk will present a number of clinical cases describing ocular and neurological findings.

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**Name:** Dr Lisa Hamm  
**Presentation title:** Deprivation Amblyopia

**Abstract**

Childhood cataracts can result in a particularly severe form of amblyopia, called deprivation amblyopia. Contrast balancing techniques (of particular interest in anisometropic and strabismic amblyopia research) have not been attempted in this cohort. We investigated contrast sensitivity and interocular contrast balance in 21 children with deprivation amblyopia, 10 with normal vision, and 14 with anisometropic and/or strabismic amblyopia. Since duration of deprivation is known to influence clinical outcomes, we also interviewed families to understand the reasons for delays in cataract removal. The psychophysical data suggested children with early visual deprivation had very limited functional binocularity. However, most children were capable of binocular combination, at least intermittently, with a large contrast offset. Delayed cataract removal appeared to 1) negatively impacted the capacity for binocular integration, and 2) be preventable. In addition to other known benefits, reducing delays in cataract removal is important to encourage functional binocularity for children with early cataracts.

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**Name:** Professor Steven Dakin  
**Presentation title:** Visual Processing and Autism

**Abstract**

Autism spectrum disorder (ASD) is a neuro-developmental condition, affecting 1.6% of children in New Zealand. Although primarily characterised by impairments in social interaction and communication, “hyper-or hypo-reactivity to sensory input” is now a diagnostic criterion for ASD (DSM-V, 2013). In this talk I will review evidence relating to differences in visual processing amongst people with ASD. I will focus on two strands of work. The first concerns simple or “low-level” differences in visual function (such as acuity). The second highlights differences in processing of local and global information (e.g. Dakin & Frith, 2005). The latter set of findings have recently been related to a Bayesian probabilistic framework where vision in autism is characterised as an under-reliance on past experience.

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**Name:**

Dr Jason Turuwhenua

**Abstract**

This talk will discuss a new approach to eye motion analysis using recordings of optokinetic nystagmus. This research is aimed at developing a new reliable, objective and clinically usable test that allows for the measurement and detection of vision problems in young children. The device is designed to automatically detect the presence, absence and direction of OKN, as young children freely view carefully designed drifting stimulus patterns, allowing highly diagnostic measures of visual acuity. This technology will be especially useful in the diagnosis of childhood conditions such as amblyopia where measurements of vision are crucial to monitor progress, but where it is often difficult to elicit a subjective response - particularly in infants.

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**Name:**

Dr Phil Turnbull

**Presentation title:**

Virtual Reality and the Eye

**Abstract**

Virtual Reality (VR) is becoming mainstream. While there a lot of research interest in the *application* of VR, there is little in the way of the *effect* of VR on the eyes. VR headsets present stereo images on a screen very close to the eyes, viewed through high powered convex lenses. This optical arrangement can be both myopiagenic and a binocular vision challenge. This talk will provide guidance on what to expect, and what to advise your patients in this increasingly virtualised world.

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**WORKSHOPS****Name:**

Dr Ehsan Vaghefi, Prof Steven Dakin, Dr Phil Turnbull, Dr Jason Turuwhenua, Dr Lisa Hamm, Dr Andrew Collins

**Presentation title:**

Workshop 1 – Ocular Imaging

**Abstract**

The field of ophthalmic imaging is being revolutionized by the introduction of novel modalities. These advances include new generation swept source optical coherence tomography (SS-OCT) and OCT angiography (OCT-A). This workshop will show examples of these technologies with examples of clinical conditions and cases, and how newer technologies can provide enhanced information for diagnosis and management of ocular pathology including glaucoma. Demonstrations will also be given of eye trackers which can be used to aid diagnosis or monitor progression of ocular pathology and neurological disease. Virtual reality technology will also be demonstrated.

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**Name:** Dr Nicola Anstice, Dr Joanna Black, Tina Gao

**Presentation title:** Workshop 2 – Paediatric Optometry

**Abstract**

This workshop will cover what is required in a ‘gold standard’ paediatric examination of infants, pre-schoolers and older children. Particular emphasis will be placed on techniques which are able to detect ocular pathology or amblyogenic risk factors. Techniques will be demonstrated which can be used to assess reading function in children including eye-tracking and tests of visuo-motor integration. The workshop will also allow ‘hands-on’ experience with a variety of paediatric tools including tests of visual acuity, stereopsis, binocular training software and a variety of auto-refractors. Current evidence based treatment guidelines for the treatment of paediatric refractive error and amblyopia.

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**Name:** Dr Keith Pine

**Presentation title:** Workshop 3 – Ocular Prosthetics

**Abstract**

Dr Pine will demonstrate the manufacture of prosthetic eyes, and show how optometrists should examine anophthalmic sockets to assess for signs of inflammation or infection and advise patients about the ongoing care of prosthetic eyes.

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**Name:** Dr Lily Chang

**Presentation title:** Workshop 4 – Electrophysiology

**Abstract**

Ocular electrophysiology remains an important tool for the diagnosis of conditions affecting the retina and visual pathway. One of the advantages of ocular electrophysiology is that it is an objective measurement of visual function and does not depend on patient response. It is also capable of isolating sub-populations of cells/pathway in the visual system, which contributes to more specific disease diagnoses. In this workshop the techniques of pattern VEP, flash VEP, pattern ERG, and multifocal ERG will be demonstrated including examples of retinal pathology. Full-field ERG and its role in the diagnosis of retinal dystrophies/retinopathies will also be discussed. Additional clinical procedures using electrophysiology, such as visual acuity measurement and glaucoma assessment will also be demonstrated.

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**Name:** Dr Hussain Patel

**Presentation title:** Workshop 5 – Glaucoma Case Presentations (peer review)

**Abstract**

This session will be aimed at those practitioners that have met the criteria as an approved optometrist glaucoma prescriber. The session will be led by Dr Hussain Patel, and allow the presentation and discussion of glaucoma cases.

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**SUNDAY JULY 23<sup>rd</sup>**

**Name:** Tina Gao

**Presentation title:** Outcome of the BRAVO clinical trial: Optical treatment phase

**Abstract**

The BRAVO study was a placebo-controlled, double-masked, randomised clinical trial investigating a home-based binocular videogame treatment for amblyopia in older children and adults. The trial was led by SOVS at Auckland, and had study sites in Australia, Canada, and Hong Kong. In total, 137 potentially eligible participants (age 7-55 years) with unilateral amblyopia were recruited. After the optical treatment (“refractive adaptation”) phase, 115 were randomised. In this talk, I will summarise the results of the pre-randomisation optical treatment phase of the BRAVO clinical trial, and discuss the important implications for research and clinical practice.

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**Name:** Dr Joanna Black

**Presentation title:** Outcome of the BRAVO clinical trial: Main Results

**Time Allowed for Questions/Discussion: 15 minutes (at end of session)**

**Abstract**

Baseline characteristics of randomised participants will be discussed, as well as overall findings from the study including the primary outcome of visual acuity following six weeks of training, and secondary outcomes including stereoacuity and suppression. Other factors such as treatment compliance and treatment acceptability were also investigated. In this talk, I will discuss how the final outcomes of the BRAVO trial compare to other studies of binocular amblyopia treatments and how this research may influence treatment guidelines in the future.

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**Name:** Dr Nicola Anstice,

**Presentation title:** Update on Paediatric Therapeutics

**Time Allowed for Questions/Discussion: 15 minutes (at end of session)**

**Abstract**

This talk will summarise common conditions in childhood requiring therapeutic interventions and current treatment guidelines. Inflammatory, infectious and atopic conditions will be discussed. Paediatric cases require careful consideration when deciding on appropriate prescribing in terms of medication type, dosage, treatment period and modality of drug instillation. Children can present with atypical signs, different microbial causation and conditions which require investigations for systemic involvement when compared to adult populations.

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**Name:** Dr John Phillips

**Presentation title:** Increasing the efficacy of myopia control

**Abstract**

Strategies for controlling myopia progression include atropine eye drops or optical methods which impose myopic defocus on the retina (e.g. orthokeratology or multifocal soft contact lenses). Both myopic defocus and atropine cause thickening of the choroid, and it has been suggested that choroidal thickening is a potential indicator of signals for slowing eye growth. Recently we have investigated the effect of combining atropine and myopic defocus on choroidal thickness in children. We found an additive effect of defocus and atropine on choroidal thickness which suggests that a dual therapy could provide better myopia control than either defocus or atropine alone.

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**Name:** Dr Andrew Collins

**Presentation title:** The light environment and myopia: can we stop it developing?

**Abstract**

While effective optical and pharmacological methods are now available to control the progression of myopia, manipulation of the environment may provide the best approach to stopping the onset of myopia in the first place. Spending increased time outdoors has been clearly shown to lower the risk of myopia onset in children. The relatively high light levels encountered outdoors are likely to mediate this effect. This talk will discuss the role of light in preventing myopia onset and present the results of recent experiments which support that this mechanism may be particularly dependent on short wavelength (blue) light.

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**Name:** Joe Tanner

**Presentation title:** 3-year effectiveness of a Dual-Focus 1 Day Soft Contact Lens for Myopia Control

**Abstract**

This presentation will summarise key results from an ongoing study. Myopic children aged 8 to 12 years, with no prior CL experience, were enrolled in a prospective, randomised, double-masked, controlled multicentre study at 4 investigational sites. Subjects wore either MiSight 1 day (M1D) or a single vision contact lens (SVCL), both omafilcon A (CooperVision). Participants' initial myopia ranged from 0.75 to 4.00D and astigmatism was < 1.00D. Cycloplegic autorefractometry (SERA) and axial length (AL) were measured at baseline and every 12 months for 3 years. M1D slowed the progression of myopia in children aged 8-12 through 3 years.

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**Name:** Safal Khanal

**Presentation title:** Atropine's action to control myopia: Understanding the mechanisms.

**Abstract**

Atropine eye drops are currently the most effective treatment for progressing myopia, however, the site of atropine's anti-myopia action is still unknown. It is known that optical defocus produces

sign dependent changes in the electrical activity of the retina— hyperopic defocus is associated with reduced retinal responses whereas, myopic defocus causes an increase. Recently, we investigated the effects of 0.1% atropine on inner and outer retinal electrophysiological responses to short-term imposed defocus. This talk will highlight the findings from this study, which suggest that myopia control with atropine might be based on a retinal site of atropine's action.

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**Name:** Alex Petty

**Presentation title:** Tackling the myopia epidemic in the real world: Myopia control in private optometry practice.

**Abstract**

By 2050 over half of the world's population will be myopic. Not only restrictive on a person's lifestyle, all levels of myopia increase the chance of serious eye disease later in life. Reducing the prevalence of this epidemic condition is hugely important to limit the personal, social and economic effects a myopic population will bring.

Currently in New Zealand myopia control services are best provided in a private optometry setting. This lecture will explore the myopia control options available in a private practice and will evaluate the literature regarding their efficacy. Alex will also offer his own insight about offering different myopia control options in different scenarios.

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**Name:** Student Presentations (quick fire presentations)

**Abstract**

Summer studentships are offered over the summer break each year. They allow students to complete a 6 or 10 week research project during their undergraduate degree. This presentation will be presented in a quick fire format and highlight the summer studentships currently being offered in the School.

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**CLINICAL GRAND ROUNDS**

**Name:** Rebecca Findlay

**Presentation title:** Clinical Grand Rounds – Strabismus as a presenting complaint .

**Abstract**

Strabismus is a common condition in children. It may be the result of uncorrected refractive errors or of dysfunction of normal binocular development, however strabismus may be the first presenting sign of an underlying ocular or systemic condition. This case series illustrates a series of patients in which strabismus was the presenting complaint, with a range of underlying conditions as the primary cause. It demonstrates the importance of a comprehensive eye examination, including fundus examination, for all children presenting with strabismus to rule out ocular, retinal and cranial pathology.

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**Name:** Robert Ng

**Presentation title:** Clinical Grand Rounds

**Abstract**

This case study illustrates the use orthokeratology to provide multifocal properties in an individual with unilateral pseudophakia.

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**Name:** Jason Dhana

**Presentation title:** Clinical Grand Rounds: Quick Fire – Emergency Eye Clinic  
**Duration of presentation:** 15 minutes

**Abstract**

Working in the Emergency Eye Clinic at Greenlane Hospital requires you to constantly be on your toes in a fast-pace environment. I'm bringing this theme to my talk with a series of 'quick-fire' presentations of the weird and wonderful cases seen within an emergency ophthalmology clinic. From trauma to retained foreign bodies to metastases - Greenlane has 'em all!

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**Name:** Adele Jefferies

**Presentation title:** Therapeutic Contact Lenses – going beyond visual correction

**Abstract**

While contact lenses have been traditionally utilized for the management of ametropia, their therapeutic potential is well recognized and continues to expand. Contact lenses reduce pain, promote epithelial healing and protect the ocular surface in both acute and chronic ocular surface pathologies. This talk will discuss the advantages, disadvantages and scope of rigid gas permeable, hydrogel and silicone hydrogel lenses for the treatment of eye diseases, with an emphasis on appropriate lens selection and lens fitting considerations. It examines the current and historical role of contact lenses in the management of diseases of the eye and adnexa with the goal of providing practicing optometrists evidence-based guidelines for fitting therapeutic contact lenses.

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**Name:** Jagrut Lallu

**Presentation title:** Clinical Grand Rounds: Hyperopic Orthokeratology

**Abstract**

This talk will focus on an overview of the technique, clinical applications, how to fit this and case studies. The talk will also provide a brief summary of the evidence based research thus far as well as goals of research to be conducted in an ongoing relationship with the University of Auckland.

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**Name:** Dr Lily Chang

**Presentation title:** Clinical Grand Rounds: Incidental Findings in the University brain research clinics

**Time Allowed for Questions/Discussion: 5 minutes**

**Abstract**

The University of Auckland has a number of multi-disciplinary clinics aimed at recruiting participants into research in the areas of stroke and dementia: this talk will discuss several cases of incidental findings during visual screening in these clinics

