



## Abstract Title

Measurements of Macular Atrophy with Near Infrared Reflectance vs Fundus Autofluorescence Imaging

## Contact

Mr Eden McDonogh  
The University of Sydney

## Conflict of interest

No

## Authors

1. Long Phan, Cureos Research
2. Hemal Mehta, University of Sydney, Strathfield Retina Clinic
3. Hayden Chae, The University of Sydney
4. Ekaterina Petrova, The University of Sydney

## Abstract

### Background:

Macular atrophy is a significant cause of long-term visual decline in neovascular age-related macular degeneration (AMD). While fundus autofluorescence (FAF) is the established standard for atrophy measurement, near-infrared reflectance (NIR), which is often acquired concurrently with optical coherence tomography (OCT), presents a widely accessible alternative that requires further validation.

### Aims:

To evaluate the agreement between NIR and FAF in measuring macular atrophy, and to assess how lesion characteristics influence measurement variability.

### Methods:

This retrospective longitudinal study included 100 eyes of patients being treated for neovascular AMD with a minimum of 3 years follow up imaging demonstrating macular atrophy. Lesion areas were manually graded on NIR using Heidelberg Eye Explorer contouring tool and on FAF using the RegionFinder tool. Agreement between modalities was assessed using paired t-tests, intraclass correlation coefficients (ICCs), and Bland-Altman analysis. Subgroup analyses evaluated the impact of lesion size, location, contiguity, and the presence of fibrosis on measurement variability.

### Results:

NIR and FAF measurements showed small, non-significant mean relative differences (1.3–4.0% of average lesion size). Agreement between modalities was excellent (ICC 0.98 at baseline; 0.99 at follow-up). However, individual lesions exhibited clinically meaningful variability. Smaller lesions (<1.25 mm<sup>2</sup>) and non-subfoveal lesions demonstrated greater measurement differences, with mean absolute deviations of 18.7% and 12.4%, respectively. Lesion contiguity and fibrosis did not significantly influence agreement.

### Conclusion:

NIR imaging provides measurements of macular atrophy that are highly concordant with FAF, supporting its use as a valid alternative in clinical and research settings. Caution is advised when interpreting small or non-subfoveal lesions, where measurement variability increases.



## Abstract Title

Patient education and consent in public hospital cataract surgery

## Contact

Mr Shayan Lahijanlian  
University of Sydney

## Conflict of interest

No

## Authors

1. Chris Hodge, University of Sydney
2. Tim Roberts, Vision Eye Institute

## Abstract

### Purpose:

To explore medical practitioners' perceptions and practices regarding patient education and consent for cataract surgery in public hospitals and identify areas for improvement.

### Methods:

A cross-sectional, anonymous online survey was distributed to ophthalmology staff at ten public hospitals. The survey assessed frequency of specific consent practices and perceived challenges using Likert scales and optional free-text responses. Descriptive statistics, Chi-squared, Mann-Whitney U and Kruskal-Wallis tests were used to analyse differences by hospital and staff role.

### Results:

Forty-eight responses were received, mainly from specialists (n=20) and trainees (n=18). Most respondents (>80%) reported that patients were consistently informed about cataracts, surgical risks, and visual prognosis. Fewer respondents reported using models (41.8%) or routinely providing take-home educational materials (26.2%). Common challenges cited included time constraints (67%) and communication barriers (60%). Specialists were less likely than trainees/fellows to use professional translators when family was present (p<0.001).

### Conclusion:

Core elements of informed consent are generally addressed, but gaps remain in the provision of supplementary educational material. Time and communication remain key barriers. Interventions such as standardised checklists, easier access to translators, and educational resources are recommended to enhance the consent process.



## Abstract Title

iStent alone versus iStent with phacoemulsification as surgical interventions for glaucoma

## Contact

Dr Kenneth Ooi  
Clinical Senior Lecturer, Save Sight Institute

## Conflict of interest

No

## Authors

1. Natasha Goh, Save Sight Institute

## Abstract

### Introduction:

Minimally invasive glaucoma surgery with devices such as iStents are helpful in reducing the burden of glaucoma drops in terms of polypharmacy, cost and ocular surface inflammation. The purpose of this study was to measure the effectiveness of iStent inject W as a standalone (SA) procedure and combined with phacoemulsification (combined) as management of open-angle glaucoma (OAG) over a postoperative period of 24 months (M24).

### Method:

A longitudinal assessment was performed in patients with OAG implanted with iStent inject W as SA or combined from a private ophthalmology practice in Sydney. The primary endpoints were the changes in mean intraocular pressure (IOP) and number of glaucoma medications over time. Other endpoints included changes in the proportion of medication-free eyes, and average visual field mean deviation (MD) and logMAR postoperatively at M24.

### Results:

15 eyes from 11 patients and 15 eyes from 10 patients were analysed from the SA and combined groups respectively. The mean preoperative IOP was  $14.7 \pm 4.4$  mmHg and  $13.9 \pm 4.5$  mmHg for SA and combined groups respectively. The mean number of glaucoma medications preoperatively were  $1.5 \pm 0.7$  for SA group and  $2.1 \pm 1.1$  for the combined group. At M24, the reductions in mean IOP were 2.1 mmHg (95%CI: -4.2, -0.1) for SA group and 3.3 mmHg (95%CI: -6.0, -0.6) for the combined group. In terms of the mean number of glaucoma medications, SA group exhibited reductions of 0.8 (95%CI: -1.7, 0.1), whereas combined group had reductions of 2.7 (95%CI: -4.6, -0.8). 40% of SA eyes and 54% of combined eyes became medication-free postoperatively. No statistically significant improvement was observed in mean MD in both groups postoperatively. Mean logMAR values were improved in the combined group only.

### Conclusion:

iStent inject W, whether SA or combined, is a suitable surgical intervention in managing OAG and reducing medication burden.



## Abstract Title

Quantification of ocular gene therapy-related inflammation using the VRMACS grading system.

## Contact

Miss Maram Abdalla Elsayed  
Academic Vitreoretinal Fellow, University of Oxford

## Conflict of interest

No

## Authors

1. Robert E MacLaren, University of Oxford

## Abstract

### Purpose:

Retinal gene therapy has been shown to be of benefit in treating inherited retinal degenerations and may become the first line of treatment for patients with more common conditions such as age-related macular degeneration and diabetic retinopathy. A major limitation of ocular gene therapy is inflammation which is difficult to grade due to the small number of studies across different centres. The absence of a standardized, reproducible system to grade retinal inflammation limits cross-study comparisons and consistent safety assessment.

### Methods:

Analysis of data from patients at the data centre who had undergone retinal gene therapy and evidence from previously published retinal gene therapy studies that report inflammatory outcomes was synthesized. Inflammatory phenotypes in retinal gene therapy were characterized to guide monitoring.

### Results:

The VRMACS score (0-6) is proposed to assess retinal inflammation over time using multimodal imaging and microperimetry. The system evaluates six domains: vitritis/ vitreous haze as evidenced by vitreous cells or vasculitic leakage on fundus fluorescein angiogram (V), retinitis as evidenced by retinal thickening or outer retinal haze (R), significant microperimetry drop from baseline (M), fundus autofluorescence loss or accelerated contraction of preserved fundus autofluorescence area (A), choroiditis as evidenced by choroidal thickening (C), and hyperreflective subretinal cellular infiltrates within the treated area – typically triangular (S). A score of 1 given for each of these 6 cardinal signs of post-retinal gene therapy inflammation, or 0 if absent, giving a maximum score of 6.

### Conclusion:

From a regulatory perspective, adoption of this system may support consistent safety assessment across gene therapy clinical trials and facilitate regulatory evaluation of inflammation-related adverse events. Clinically, VRMACS offers a framework for monitoring retinal gene therapy patients and guiding timely intervention.



## Abstract Title

Optic nerve head vessel density measures and visual field mean defect in IIH

## Contact

Ms Sara Goldberg  
Medical Student, Australian National University

## Conflict of interest

No

## Authors

1. Betelhem Yibekal, Australian National University
2. Emilie Rohan, Australian National University
3. Bhim Rai, Australian National University
4. Joshua Paul van Kleef, Australian National University
5. Ted Maddess, Australian National University

## Abstract

### Introduction:

Idiopathic Intracranial Hypertension (IIH) is a syndrome characterised by raised intracranial pressure without an identifiable cause. IIH predominantly affects women of reproductive age and is strongly associated with metabolic disease. The purpose of this study was to determine the relationship between measures related to optic nerve head (ONH) vessel density measured by optical coherence tomography angiography (OCTa) and visual field mean defect (MD) assessed by Matrix perimetry in patients with IIH. OCTa provides static information about blood flow, and quantification has traditionally relied on measures of vessel density. Previous studies have suggested that microvascular changes may precede neural impairment at the ONH. We therefore assessed the OCTa data of patients with IIH to determine if microvascular changes correlate to the extent of visual field loss measured by Matrix Perimetry. This may enable detection of structural abnormalities before functional deficits arise.

### Methods:

We recruited 25 patients with IIH and measured visual field MD using Zeiss Matrix Perimetry. We also took images of the ONH using OCTa at 7 retinal layers and quantified these images using 9 statistical measures applied to 12 sectors around the ONH. Based on their MD we divided the eyes into a more and less severe group. We then compared the different OCTa measures to determine which had higher diagnostic power.

### Results:

Of the participants, 92% were female and 8% male. The mean MD between the two groups was statistically significant (t-test  $P < 0.0001$ ). For the OCTa data, standard deviation performed well for more amorphous layers such as AC and CR. The Euler number performed best for finer capillary layers such as DCP and NFLVP, with some Euler numbers producing a diagnostic power as high as 80.5%.

### Conclusions:

The use of OCTa data in the management of patients with IIH may be a more useful tool than perimetry alone.



## Abstract Title

A Novel Cortisol Biosensor for Point-Of-Care testing in patients CSC

## Contact

Kristina Rhee  
Macquarie University Faculty of Medicine

## Conflict of interest

No

## Authors

1. Professor Veronica Preda, Professor Macquarie University
2. James Jabbour, Sydney Eye Specialists
3. Noushin Nasiri, Macquarie University

## Abstract

Biosensors are emerging as essential tools in medical diagnostics due to their ability to rapidly and accurately detect biomarkers at the point of care.

A biosensor typically consists of a bioreceptor that recognises a target molecule, a transducer that converts this interaction into a measurable signal, and a display system for interpretation

(1). Cortisol is a critical biomarker involved in stress regulation, cardiometabolic health, immune function, and ocular health (2,3). It follows a circadian rhythm, peaking in the early morning and reaching its lowest levels around midnight (4). Dysregulation of cortisol levels is implicated in various conditions, including central serous chorioretinopathy(CSC), Cushing's syndrome, Addison's disease, depression, and metabolic syndrome (3-7).

Despite the clinical significance of cortisol, existing methods for its quantification have notable limitations, including the need for laboratory infrastructure, long turnaround times, and a lack of portability (8-9). Currently, no commercially available point-of-care or wearable biosensor exists for cortisol detection. Electrochemical biosensors represent a promising alternative due to their portability, affordability, and potential for miniaturisation (9). Sensitivity can be further enhanced by incorporating nanomaterials such as gold nanoparticles (11-12). Antibody-based sensors also offer high specificity for cortisol recognition (13).

This project proposes the development of a novel electrochemical cortisol biosensor employing antibody-functionalised gold nanoparticles. The functionalised nanoparticle will be incorporated into a novel electrochemical transducer platform designed for use with human saliva samples.



## Abstract Title

Does a misalignment of diffractive trifocal IOLs to the pupil center affect visual outcomes?

## Contact

Dr Alexander Maloof  
Resident Medical Officer, Prince of Wales Hospital

## Conflict of interest

No

## Authors

1. Bobak Bahrami, Univesity of Adelaide
2. Weng Chan, Adelaide University
3. Michael Goggin, Adelaide University

## Abstract

### Importance:

The effect of the mismatch of trifocal intraocular lens (IOL) centre and pupil centre on long term visual acuity (VA) and contrast sensitivity (CS) is not well established, and is theorised to affect visual outcomes after cataract surgery. Thus, we aimed to determine the effect of routinely encountered mismatch between the intraocular lens (IOL) centre and pupil centre on contrast sensitivity (CS), visual acuity (VA) and higher order aberrations (HOAs) one year after the implantation of a diffractive trifocal IOL following cataract surgery.

### Methods:

51 eyes underwent phacoemulsification surgery with implantation of an AT LISA tri 839M or AT LISA TRI toric 939M diffractive trifocal IOL. Twelve months post-operatively, IOL positioning relative to the pupil centre, VA, aberrometry, tomography and standardised mesopic and photopic CS measurements were assessed. Correlation coefficients were derived for pupil centre to IOL centre distance, CS, VA and HOA.

### Results:

The mean  $\pm$  standard deviation time of follow up post-surgery was  $458 \pm 222$  days. Uncorrected VA was better than logMAR 0.24 at all near, intermediate and distance in all eyes. The mean difference between the IOL centre and the centre of the pupil was  $0.25\text{mm} \pm 0.21\text{mm}$ . There was no correlation between IOL-pupil centre mismatch for mesopic CS ( $p=0.318$ ) and photopic CS ( $p=0.175$ ). There was no correlation between IOL-pupil centre mismatch and combined HOA root mean squares ( $p= 0.097$ ).

### Conclusions:

There was no significant correlation between minor, routinely encountered IOL-pupil centre mismatch relative to the pupillary axis and CS or HOA, visual acuity, contrast sensitivity or higher order aberrations following implantation of trifocal lenses.



## Abstract Title

Validation of a Portable Tool for Conjunctival Ultraviolet Autofluorescence Imaging

## Contact

Miss Priya Bahra  
Medical Student, UNSW Medicine & Health

## Conflict of interest

No

## Authors

1. Lea Damjanovic, Prince of Wales Hospital
2. Koko Faen, UTS
3. Ashish Agar, Prince of Wales Hospital
4. S Mojtaba Golzan, UTS
5. Minas T Coroneo, Prince of Wales Hospital

## Abstract

### Introduction:

Conjunctival ultraviolet autofluorescence (CUVAF) is an objective biomarker of ocular sun exposure, aiding in the assessment of ophthalmohelioses and other UV-related eye conditions. However, conventional CUVAF imaging requires a bulky and costly benchtop digital single-lens reflex (DSLR) camera system. This study evaluates the validity of a smartphone-based clip-on tool as a portable, affordable alternative for CUVAF imaging.

### Methods:

95 participants were recruited from an ophthalmology clinic in Sydney, Australia. Nasal and temporal conjunctival images were captured using both DSLR-based and smartphone-based systems. CUVAF was quantified using two parameters: area ratio (CUVAF area relative to visible sclera) and intensity ratio (CUVAF mean intensity relative to adjacent background). Agreement between systems were assessed using Bland–Altman analysis.

### Results:

The mean age of participants was  $58 \pm 14$  years, with 42% male. CUVAF area ratios were slightly higher in smartphone images ( $0.037 \pm 0.03$ ) compared to DSLR ( $0.022 \pm 0.02$ ,  $p < 0.01$ ). Intensity ratios showed no significant difference between systems (smartphone:  $1.35 \pm 0.24$ , DSLR:  $1.37 \pm 0.28$ ,  $p = 0.43$ ). Bland–Altman plots demonstrated good agreement, with mean differences of  $-0.014$  for area and  $0.041$  for intensity.

### Conclusion:

The smartphone-based CUVAF imaging tool demonstrates strong agreement with the gold-standard DSLR system, supporting its potential for clinical and field-based assessment of ocular UV exposure. Slight differences in measured CUVAF area are likely attributable to inherent differences in optical geometry and magnification between the two devices, not underlying biological variation.



## Abstract Title

Meta-analysis of adverse events in conventional vs accelerated cross-linking for keratoconus

## Contact

Dr Jack Gan  
University of Sydney

## Conflict of interest

No

## Authors

1. Dr Jack Gan, University of Sydney

## Abstract

### Background:

Accelerated cross-linking (A-CXL) reduces treatment time, yet comprehensive data comparing its adverse event profile with conventional protocols (C-CXL) remain limited.

### Methods:

Two reviewers independently extracted data from Medline, Embase, Scopus, Web of Science, and Cochrane databases (January 2011-October 2024) using standardized forms. We included 37 studies of 7,119 eyes (A-CXL: n=3,032; C-CXL: n=4,087) with keratoconus and epithelium-off protocols with minimum 12-month follow-up.

### Results:

Corneal haze/scarring was the most common adverse event, with no significant difference in pooled incidence between protocols (A-CXL: 8.7% vs C-CXL: 8.0%,  $P=0.73$ ). Within A-CXL cohorts, UV intensity did not significantly influence haze rates (moderate 9-10 mW/cm<sup>2</sup>: 8.1% vs high 18 mW/cm<sup>2</sup>: 10.2%,  $P=0.52$ ). Rare adverse events showed no differences between protocols: sterile infiltrates (A-CXL: 1.0% vs C-CXL: 0.7%), microbial keratitis (0.4% vs 0.3%), corneal erosions (0.0% vs 0.1%). Despite comparable safety profiles, A-CXL achieved superior 12-month functional and topographic outcomes: uncorrected visual acuity (-0.11 vs -0.08 logMAR,  $P<0.001$ ), corrected visual acuity (-0.07 vs -0.04 logMAR,  $P<0.001$ ), maximum keratometry (-1.65 vs -1.22 D,  $P<0.001$ ), and less corneal thinning (-11.7 vs -16.6  $\mu\text{m}$ ,  $P<0.001$ ). Baseline disease severity was the primary predictor of adverse events. Advanced keratoconus ( $K_{\text{max}}\geq 52\text{D}$ ) was associated with a three-fold higher incidence of haze/scarring compared to milder disease ( $K_{\text{max}}< 52\text{D}$ ; 8.1% vs 2.8%,  $P=0.002$ ).

### Conclusions:

Corneal haze/scarring occurs in approximately 1-in-10 eyes following CXL, while serious adverse events affect 1-in-75 eyes. A-CXL demonstrates a safety profile comparable to C-CXL regardless of UV intensity but achieves significantly superior visual and topographic outcomes at 12 months with reduced treatment time.



## Abstract Title

Adverse Events of Accelerated vs Conventional Crosslinking for Keratoconus in SSKR

## Contact

Dr Jack Gan  
University of Sydney

## Conflict of interest

No

## Authors

1. Dr Jack Gan, University of Sydney

## Abstract

### Purpose:

To compare the incidence, chronological onset, and clinical impact of adverse events following accelerated (A-CXL) versus conventional (C-CXL) epithelium-off corneal cross-linking for keratoconus in a real-world setting.

### Methods:

This retrospective study analysed data from the prospectively designed Save Sight Keratoconus (SSK) registry across multiple international centres. A total of 3,598 eyes were evaluated, of which 2,284 underwent A-CXL and 1,314 underwent C-CXL. The primary safety outcomes were the incidence of adverse events, including clinically significant haze, sterile infiltrates, and microbial keratitis.

### Results:

Clinically significant haze was the most common adverse event (10.4% [95% CI 9.3%-11.5%]). A-CXL demonstrated significantly higher rates of haze (13.2% vs 5.6%;  $P < 0.001$ ) and persistent epithelial defects (1.5% vs 0.4%;  $P = 0.003$ ) than C-CXL. Rates of other events were not significantly different between protocols, including corneal scarring (2.1% vs 1.6%), sterile infiltrates (0.8% vs 0.6%), and microbial keratitis (0.8% vs 0.5%). Notably, both protocols achieved equivalent long-term visual outcomes (mean improvement at 12 months: 3.1 vs 3.0 logMAR letters;  $P = 0.930$ ). Across both protocols, median time to onset was 6 days for sterile infiltrates, 13 for persistent epithelial defects, 20 for microbial keratitis, 60 for haze, and 203 for corneal scarring. Haze (median 52 vs 128 days,  $P < 0.001$ ) and persistent epithelial defects (median 8 vs 20 days,  $P = 0.003$ ) developed significantly earlier with A-CXL than C-CXL. Other adverse events showed no significant differences in onset timing between protocols.

### Conclusions:

A-CXL demonstrated significantly higher incidence and earlier onset of corneal haze and persistent epithelial defects compared to C-CXL. Despite these differences, 12-month visual outcomes and rates of serious adverse events remain equivalent between protocols.



## Abstract Title

Factors Associated with Acceptance of Home Visual Fields Testing and Virtual Reviews in Glaucoma

## Contact

Mr Edward Guo  
University of New South Wales

## Conflict of interest

No

## Authors

1. Jason Cheng, Sydney Eye Hospital
2. Jessica Li, Sydney Eye Hospital
3. Chris Hodge, Vision Eye Institute
4. Rannie Nguyen, Liverpool Hospital
5. Annie Li, Dunedin Hospital

## Abstract

### Introduction:

Glaucoma is a progressive, potentially sight-limiting disease that requires lifelong visual field (VF) testing. Remote VF testing and virtual reviews may reduce the burden of continuous monitoring. This study investigates patients' perspectives on home VF testing and preferences for follow-up.

### Methods:

A cross-sectional survey was conducted among patients attending public and private ophthalmology clinics in Australia and New Zealand. Eligible patients were aged  $\geq 18$  years, diagnosed with glaucoma and attended glaucoma ophthalmological reviews no more than twice yearly. Data collected included demographics, clinic access factors, technology access, attitudes towards home VF testing and VF follow-up preferences.

### Results:

121 patients were recruited. Most were aged  $>60$  years old (74%); 53% were female, and 61% were retired or not employed. Of the 73% ( $n=88$ ) of patients who reported access to both an internet-connected device and a personal email address, 60% reported interest in home VF testing if it reduced time spent in clinic. Twenty-one percent ( $n=25$ ) preferred home VF testing prior to clinic review; 64% of this group were  $<60$  years old. Eleven percent ( $n=13$ ) preferred in-clinic VF tests and virtual follow-up. In both preference groups,  $>90\%$  expected to spend  $>1$  hour waiting at their eye clinic. Most had adequate technological access (100% and 62%), felt confident in performing home VF testing (73% and 88%) and reported interest in remote VF testing if it reduced time spent in clinic (92% and 63%).

### Conclusion:

A subset of patients showed greater readiness for home VF testing and virtual reviews. Patients under 60 who expected long clinic wait times, had access to technology and were confident in self-testing may be suitable targets for remote VF testing and follow-up.



## Abstract Title

Unlikely hero: anti-VEGF arrests spontaneous hyphema in Fuch's Heterochromic Iridocyclitis

## Contact

Dr Gerry Guo  
Resident Medical Officer, Royal North Shore Hospital

## Conflict of interest

No

## Authors

1. Liane Papantoniou, Sydney Eye Hospital
2. James Smith, Royal North Shore Hospital
3. Keith Ong, Royal North Shore Hospital

## Abstract

### Introduction:

Fuch's heterochromic iridocyclitis (FHI) is a chronic unilateral uveitis often complicated by secondary glaucoma and iris vascular fragility. Hyphema in FHI may exacerbate ocular hypertension and cause significant morbidity if unresolved. Evidence on the management of persistent hyphema in FHI remains limited. We report a case in which intravitreal ranibizumab was used to rapidly arrest spontaneous hyphema and facilitate further glaucoma management.

### Case Presentation:

A male in his 50s presented with sudden-onset pain, photophobia, and blurred vision in the left eye. Although not formally diagnosed, previous findings of mild anterior chamber inflammation, and ocular hypertension had raised suspicion for FHI. Examination revealed a spontaneous hyphema (3mm) and a markedly elevated intraocular pressure (IOP) of 56mmHg. A prominent temporal iris vessel demonstrated intermittent active bleeding. Overall impression was of spontaneous hyphema in FHI resulting in decompensated ocular hypertension. Initial management with maximal topical therapy and oral acetazolamide resulted in partial IOP reduction to 37mmHg, with the hyphema persisting. Ongoing bleed from the peripheral iris vessel was considered a significant contributor to the elevated IOP. Although elevated IOP would typically be expected to tamponade anterior chamber bleeding, this was not observed. Hence, a single intravitreal ranibizumab injection (0.5mg) was administered. Results By day 1 post-injection, active bleeding had ceased and the hyphema had reduced to 2mm. Complete hyphema resolution and resolution of IOP to 100mmHg was observed at one week.

### Conclusion:

This case demonstrates the successful use of intravitreal ranibizumab to rapidly control spontaneous hyphema in FHI by targeting a fragile iris vessel. To our knowledge, this is the first report of anti-VEGF therapy being used in controlling hyphema related to FHI and may be a useful adjunct for clinicians when encountering a similar issue.



## Abstract Title

Explosion Related Eye Injuries at Royal North Shore Hospital

## Contact

Dr Brindhan Tharmarajah  
Ophthalmology Registrar, Prince of Wales Hospital

## Conflict of interest

No

## Authors

1. Jack Power, Sydney & Sydney Eye Hospital
2. Brett O'Donnell, Royal North Shore Hospital
3. Richard Parker, Royal North Shore Hospital

## Abstract

### Introduction:

Explosion related ocular injuries are a major cause of visual morbidity and have significant socioeconomic impacts worldwide. There are no published studies exploring explosion-related eye injuries in Australia.

### Method:

A retrospective audit of patients admitted with explosion related eye injuries at Royal North Shore Hospital (RNSH) from 2013 to 2025 was conducted. RNSH is a tertiary referral trauma centre and one of the two major referral hospitals for adult burns injuries in New South Wales.

### Results:

A total of 112 explosion-related eye injuries were identified in 65 patients. 72% of injuries were bilateral. Average age was 41 with 92% of patients being male. 29% of patients were transferred from other hospitals in New South Wales. 42% of injuries occurred at work, 29% at home, 26% during recreational activities and 3% during criminal activities. The most common cause was petrol-related explosions (23%) followed by solvent explosions (18%). 86% of patients had comorbid burns injuries with an average total body surface area of 23%. The most common injuries were eyelid burns (100%) and corneal burns (52%) and the most severe was globe rupture (4) with 3 individuals dying from their comorbid injuries. 84% of patients had restoration of their premorbid vision. Only 9% of patients wore protective eyewear.

### Conclusion:

Explosion related eye injuries are an ongoing public health concern. The majority of injuries occur in young males in the workplace. Preventative interventions should target this at-risk population.



## Abstract Title

Use of a digital infographic to summarise retinoblastoma patient journeys

## Contact

Dr Daniel Boer  
Ophthalmology Registrar, Children's Hospital Westmead

## Conflict of interest

No

## Authors

1. Cam Loveridge-Easther, Children's Hospital Westmead
2. Li-Anne Lim, Sydney Eye Hospital
3. Catriona Downie, Sydney Eye Hospital
4. Georgina Whitney, Children's Hospital Westmead
5. Michael Jones, Children's Hospital Westmead

## Abstract

### Introduction:

Retinoblastoma remains the most common primary intraocular tumour of childhood; prompt, effective treatment is vital to prevent potential mortality. Given the multiple treatment modalities and multidisciplinary team (MDT) management, understanding the complex patient journey is difficult – especially in the transition period to prior to an effective comprehensive digital medical record. This puts patients at risk, frustrates clinicians and leads to impractical time and effort collating information. Using readily available secure software, we have created a live, digital infographic that can be shared amongst treating teams to concisely summarise each patient's retinoblastoma treatment journey.

### Methods:

Review of introduction of infographic and audit of clinician feedback regarding benefits to the retinoblastoma service.

### Results:

The introduction of a digital infographic allowed collation of health data from multiple records to be summarised simply and quickly. This had the benefits of improved ease of understanding for each case, and better sharing of information in an MDT setting. Survey results show our tool enhanced clinician efficiency and suggested high utility for longitudinal oncology care. The infographic template is available to be used by teams in other treating centres.

### Conclusion:

Digital infographics are an effective way of simplifying and sharing a visual representation of a patient's journey, especially when it is complex and multiple teams are involved. Our tool is effective and can be easily integrated into clinical practice by other teams.



## Abstract Title

Ischemic Optic Neuropathy After Cardiac Surgery: A Systematic Review

## Contact

Dr Aditi Singh  
Townsville University Hospital

## Conflict of interest

No

## Authors

1. Daud Mutahar, Gold Coast University Hospital
2. Ammar Zaka, Gold Coast University Hospital
3. Amitouj Sidhu, Sydney Eye Hospital
4. Weng Onn Chan, Adelaide University
5. Celia Chen, Flinders University

## Abstract

### Background:

Ischemic optic neuropathy (ION) is the most common cause of perioperative visual loss, with the highest incidence reported after cardiac surgery involving cardiopulmonary bypass (CPB). Despite devastating complications, the overall incidence and risk factors for patients with ION in the setting of cardiac surgery remains contentious. We performed a systematic review to evaluate the global incidence and risk factors for ION after cardiac surgery.

### Methods:

This review conformed to PRISMA guidelines. PubMed, MEDLINE, Web of Science and Cochrane were searched up to March 24, 2024 for multivariable-adjusted and propensity-matched observational studies assessing the incidence of ION exclusively in patients undergoing cardiac surgery. Odds ratios (ORs) with 95% confidence intervals (CI) for each risk factor were pooled from the selected studies, using a random-effects model.

### Results:

Eleven studies totalling 6,471,577 patients were included. The pooled incidence of ION was approximately 1.50 per 10,000 cardiac surgeries. Significant risk factors for developing ION included coronary artery disease (OR: 1.81, CI: 1.17-2.79), peripheral vascular disease (OR: 1.67, CI: 1.10-2.54), and anaemia (OR: 1.06, CI: 1.00-1.13). Notably, the incidence varied widely between studies, reflecting differences in diagnostic criteria and reporting standards. Newcastle-Ottawa risk of bias assessment found the studies to be of overall moderate methodological quality, with high risk of bias.

### Conclusion:

This study demonstrates a relatively low overall pooled incidence of ION following cardiac surgery, with identifiable risk factors such as pre-existing coronary artery disease, peripheral vascular disease and perioperative anaemia.



## Abstract Title

Establishing a Spatial Transcriptomic–Histologic Framework in the Healthy Human Macula

## Contact

Dr Akshaya Thananjeyan  
University of Notre Dame Australia

## Conflict of interest

No

## Authors

1. Sarrvesa Hari Vijay Singh, University of Notre Dame Australia
2. Eric Urng Garvan, Institute of Medical Research
3. Chris Okeefe
4. Joanna Warren
5. James Fraser
6. Victoria Pye, St Vincent's Hospital
7. Hemal Mehta, University of Notre Dame
8. Svetlana Cherepanoff, University of Notre Dame

## Abstract

### Introduction:

Spatial transcriptomics preserves tissue architecture and localises gene expression, offering crucial insight into disease mechanisms. High-resolution spatial transcriptomic mapping of healthy human macular tissue is limited. We aimed to establish a spatial molecular baseline using a Visium HD platform integrated with clinicopathological validation.

### Methods:

A donor eye (67M) from the NSW Eye Bank underwent ex-vivo evaluation prior to processing. The macula was classified as normal following clinicopathological correlation of ex vivo imaging and histology. RNA quality was confirmed (DV200). FFPE sections were H&E-imaged and processed using the 10x Genomics Visium HD FFPE workflow, including deparaffinisation, probe hybridisation, CytAssist transfer and spatial library preparation for sequencing. Tissue was manually segmented in Loupe Browser with direct histologic correlation. Segmented expression matrices were exported for normalisation and differential expression analysis in R Studio.

### Results:

Five anatomically distinct retinal domains were identified: choroid/sclera, RPE, outer retina (photoreceptors/ONL/OPL), inner retina (INL/IPL), and RNFL/GCL. The RPE demonstrated enrichment of RPE65, RGR, TTR and FRZB. The outer retina was characterised by phototransduction-associated transcripts (RHO, PDE6H, AIPL1 and PRELID2). Inner retinal layers demonstrated a sublayer specificity, with NEFM (neuronal) enrichment in RNFL/GCL and GLUL (Müller glia) and PVALB (interneurons) in INL/IPL. The RPE demonstrated comparatively elevated mitochondrial transcripts (MT-ND4L, MT-CO3), consistent with metabolic specialisation. The choroid/sclera cluster was enriched with TMSB4X and MGP.

### Conclusion:

We demonstrate histologically concordant, biologically coherent spatial transcriptomic mapping of rigorously validated healthy human macular tissue. Establishing this molecular baseline provides a framework for investigating transcriptomic alterations in macular disease.



## Abstract Title

A Step-by-Step Microsoft Excel® Guide to Personalised Clinical Audit in Ophthalmology

## Contact

Dr Grace Nguyen  
Monash Health

## Conflict of interest

No

## Authors

1. Stephenie Tiew, The Royal Victorian Eye and Ear Hospital

## Abstract

### Introduction:

Clinical audit is integral to continuous reflection and improvement in clinical and surgical practice. The Royal Australian and New Zealand College of Ophthalmologists (RANZCO) Continuing Professional Development (CPD) program allocates more than half of required CPD hours to “Reviewing Performance and Measuring Outcomes.” We describe a step-by-step approach to developing a personalised Microsoft Excel® spreadsheet to support structured data collection and clinical audit.

### Methods:

A customised spreadsheet with an automated visual dashboard was designed in Microsoft Excel® (GN). Prospective data was collected (ST) over two years at The Royal Victorian Eye and Ear Hospital, a quaternary ophthalmic referral centre. Approximately 3,000 cases were recorded across the eye emergency department, outpatient clinics, inpatient wards, and operating theatres.

### Results:

The spreadsheet enabled efficient quantitative and qualitative analysis of clinical activity. The automated dashboard, adaptable to user-defined variables, was particularly useful in the emergency setting. Urgent diagnoses and critical results were highlighted to facilitate timely follow-up. The system supported continuity of care and promoted real-time learning through structured case review.

### Conclusion:

A customisable Microsoft Excel® spreadsheet provides an accessible and effective tool for maintaining a clinical and surgical logbook. It can be tailored to individual audit needs in alignment with RANZCO CPD requirements and allows straightforward data analysis. User experience has been positive, supporting reflective practice and ongoing professional development.



## Abstract Title

Non-Mydriatic Fundus Photography in the Emergency Department: Barriers and Benefits

## Contact

Dr Christyon Hayek  
Intern Doctor, NSW Health, SWSLHD

## Conflict of interest

No

## Authors

1. Shraddha Tipirneni, NSW Health
2. Richa Chaluvadi, NSW Health
3. Minsu Jung, UNSW
4. Jack Nguyen, UNSW
5. Clare Fraser, RANZCO

## Abstract

### Introduction:

Fundoscopy is essential in the assessment of patients presenting to the emergency department (ED) with neurological and ophthalmic pathology. However, fundus examination using direct ophthalmoscopy is rarely performed. This study evaluates the clinical benefit of non-mydriatic fundus photography (NMFP) and the barriers to its adoption in the Liverpool Hospital ED.

### Methods:

This was a retrospective observational study performed alongside a cross-sectional survey of healthcare practitioners using a voluntary questionnaire combining open-ended questions and 5-point Likert-scale responses. 1082 patients presented to Liverpool Hospital ED between 0800 and 1700 hours from Monday to Friday during the study period spanning from 1 February 2025 and 7 August 2025, with headache, vision changes, neurological deficit or dizziness. The 34 questionnaire respondents included interns, registrars, fellows, consultants and nurse practitioners.

### Results:

Of the 1082 patients included in the study, 53 (4.9%) received NMFP. Papilloedema, retinal detachment, vitreous haemorrhage and diabetic retinopathy were detected. Patients who received NMFP had a shorter mean length of stay of 394 minutes, compared with 491 minutes for those who did not ( $P = 0.003$ ). Reported barriers to NMFP included inadequate staff training (59% of respondents), time constraints and challenges with patient cooperation and target fixation. Advantages of NMFP compared to direct ophthalmoscopy included image storage on electronic medical records (32% of respondents), clearer field of view and improved diagnostic accuracy. Participants indicated that they would utilise NMFP more frequently if they had received more comprehensive training, with a mean Likert score of  $4.21 \pm 0.880$  (IQR = 1).

### Conclusion:

Targeted training and workflow adaptations are required to optimise NMFP implementation in emergency settings, where it can expedite assessment and management of vision- and life-threatening conditions.



## Abstract Title

Efficacy and Safety of Hydrus: Five-Year Outcomes from a Real-World Australian Registry Study

## Contact

Dr Jack Power  
SRMO, Sydney Eye Hospital

## Conflict of interest

No

## Authors

1. Leo Fan, Department of Ophthalmology, Westmead
2. Brindhana Tharmarajah, Ophthalmology Department, Prince Of Wales
3. Andrew White, Hospital and Centre for Vision Research, Westmead Institute for Medical Research
4. Ashish Agar, Department of Ophthalmology, Prince of Wales

## Abstract

### Background:

To evaluate the long-term real-world efficacy and safety of the Hydrus Microstent for patients with glaucoma treated in routine clinical practice in Sydney, Australia

### Methods:

This retrospective descriptive case series included glaucomatous eyes undergoing Hydrus Microstent implantation, either as a standalone procedure or combined with cataract surgery, between 2016 and 2025. Data were collected from Westmead hospital and two private ophthalmology clinics in Western Sydney and entered into the Fighting Glaucoma Blindness! Registry. Outcomes assessed intraocular pressure (IOP), number of antiglaucoma medications, visual field (VF) parameters, best-corrected visual acuity, intraoperative and postoperative complications, and additional glaucoma procedures. Follow-up was conducted out to five years. Paired t-tests were used to compare baseline and postoperative outcomes, with statistical significance defined as  $p < 0.05$ . Kaplan–Meier survival analysis was performed to assess absolute (maintenance of IOP  $\leq 18$  mmHg) and qualified (maintenance of IOP  $\leq 18$  mmHg and no topical medications) survival post-implantation.

### Results:

139 eyes from 117 patients were included. At five years, mean IOP was significantly reduced from  $17.6 \pm 6.6$  mmHg preoperatively to  $13.7 \pm 3.6$  mmHg ( $p = 0.0002$ ), and mean number of antiglaucoma medications decreased from  $2.2 \pm 1.4$  to  $1.3 \pm 1.3$  ( $p = 0.0023$ ). Visual field indices remained stable at five years. Kaplan–Meier analysis demonstrated absolute survival of 69.8% and qualified survival of 20.9% at five years. No intraoperative complications were recorded. Postoperative complications were infrequent and predominantly benign.

### Conclusions:

In a real-world Australian cohort Hydrus implantation, with or without concomitant cataract surgery, was associated with sustained reductions in IOP and medication burden with a favourable safety profile over 5 years.



## Abstract Title

Developmental Modification of Male Predominance in Paediatric Ocular Trauma

## Contact

Dr Edward Yates  
SRMO, Sydney Eye Hospital

## Conflict of interest

No

## Authors

1. Anthony Brown, School of Rural Health

## Abstract

### Purpose:

To quantify age and sex-specific incidence and formally evaluate age sex interaction in paediatric ocular trauma.

### Methods:

We conducted a retrospective population-based study of paediatric ocular trauma presentations (0–17 years) to regional hospitals over a 4.5-year period (August 2017–November 2022). Age- and sex-specific incidence rates were calculated using Australian Bureau of Statistics census-derived denominators and expressed per 100,000 person-years. Exact Poisson confidence intervals were estimated. Poisson regression with log(person-years) offset was used to assess age–sex interaction. Mechanism of injury, severity, and referral patterns were analysed descriptively.

### Results:

A total of 492 presentations were included. Incidence demonstrated a bimodal distribution, peaking in children aged 0–4 years (94 per 100,000 person-years; 95% CI 81–109) and adolescents aged 15–17 years (128 per 100,000 person-years; 95% CI 107–151). Incidence was consistently higher in males across all age groups. Poisson regression demonstrated significant age–sex interaction ( $p < 0.001$ ), indicating variation in the magnitude of male predominance across developmental stages. Tool/industrial mechanisms were highly concentrated among older male adolescents (77 of 78 cases in this age band). Severe injuries were uncommon (3.9%), including open globe injury in 2.0% of cases. Ophthalmic referral occurred in 11.8% of presentations.

### Conclusions:

Paediatric ocular trauma demonstrates developmental modification of male predominance, with marked amplification during adolescence driven by clustering of tool-related mechanisms. These findings demonstrate developmental modification of sex disparity in paediatric ocular trauma and support age- and mechanism-informed clinical risk stratification.



## Abstract Title

Intravitreal Methotrexate in Proliferative Vitreoretinopathy: Systematic Review & Meta-analysis

## Contact

Dr Heath Darrant Darrant  
Wagga Wagga Base Hospital

## Conflict of interest

No

## Authors

1. William Yates, Save Sight Institute
2. Matthew Simunovic, Save Sight Institute

## Abstract

### Introduction:

Proliferative vitreoretinopathy (PVR) is the leading cause of failure after retinal detachment repair. Driven by inflammation, it follows retinal pigment epithelium disruption and epithelial–mesenchymal transition, causing membrane proliferation and tractional detachment. Effective non-surgical adjuncts remain lacking. Methotrexate (MTX) has been proposed, though efficacy data are conflicting. This systematic review evaluated whether MTX reduces redetachment and PVR recurrence.

### Methods:

Two authors performed a comprehensive literature search. Non-traumatic human studies assessing intravitreal MTX (single or serial injections) were included; oral and infusion regimens were excluded. Covidence was used, with meta-analysis where appropriate.

### Results:

Fifty-four studies were screened; 10 met inclusion (246 MTX, 170 controls). MTX doses ranged 100–500 mcg. Mean redetachment rates were 19% (CI 10–32%,  $p=0.005$ ) with MTX and 39% (CI 19–64%,  $p=0.001$ ) in controls. Although all studies favoured MTX, only two showed significant reductions in redetachment odds (OR 0.26, CI 0.07–0.99; OR 0.05, CI 0.0–0.66). Pooled random-effects analysis was not significant (OR 0.44, CI 0.18–1.06). Dose-based subgroup analysis was also non-significant (OR 0.36, CI 0.09–1.52). Two studies demonstrated reduced PVR recurrence (OR 0.08, CI 0.01–0.68; OR 0.03, CI 0.0–0.60), with numbers needed to treat of 3.75 (CI 3.36–13.66) and 4.85 (CI 4.65–16.83). No significant visual acuity difference was observed (MD 0.02, CI –0.34–0.37). Punctate keratitis and keratopathy were the most common complications (5.5% and 3.5%, respectively) among MTX patients.

### Conclusion:

Findings suggest a potential protective and safe effect of MTX. However, high heterogeneity and small sample sizes resulted in wide confidence intervals. Optimal dosing and regimens cannot be determined, highlighting the need for larger trials to confirm efficacy and standardise protocols.



## Abstract Title

Retrospective Analysis of Open Globe Injuries at a Tertiary Referral Trauma Centre in Regional NSW

## Contact

Dr Clare Maher  
Westmead Hospital

## Conflict of interest

No

## Authors

1. Brad Guo, John Hunter Hospital
2. Anthony Hall, John Hunter Hospital

## Abstract

### Background:

Open globe injuries are a preventable cause of severe visual loss, frequently occurring in working-age males in high-risk occupations. However, their epidemiology and outcomes in regional Australian settings are not well described.

### Methods:

A retrospective case series of open globe injuries presenting to John Hunter Hospital, Newcastle, between 2002 and 2025 was conducted. Cases were identified using ICD-10 diagnostic codes and confirmed by chart review. Injuries were classified using the Birmingham Eye Trauma Terminology (BETT) system and visual prognosis assessed using the Ocular Trauma Score (OTS).

### Results:

Ninety-four open globe injuries (94 eyes) presented to a regional tertiary trauma centre between 2002 and 2025, predominantly affecting young adult males (87%) with a median age of 33.5 years; nearly half required inter-hospital transfer, and one quarter occurred in construction or trades workers. Penetrating injuries were the most common BETT classification (60%), followed by intraocular foreign bodies (21%) and globe ruptures (19%), with injury severity spanning a wide range (median Ocular Trauma Score 70, IQR 60–100); hyphaema and intraocular foreign bodies were frequent associated findings. Six percent of injuries were due to alleged assault and 10% involved drugs or alcohol, while documentation of protective eyewear was absent in three-quarters of cases.

### Conclusion:

Open globe injuries cause substantial ocular morbidity in regional Australia, predominantly affecting young working-age males in high-risk occupations, with poor documentation of protective eyewear highlighting preventable factors. Increased emergency department awareness of at-risk presentations may enable earlier recognition, prompt referral, and improved visual outcomes.



## Abstract Title

A Prospective Randomised Analysis of AI-Enhanced Patient Communication in Rural Teleophthalmology

## Contact

Dr Maryam Eghtedari  
Ophthalmology registrar, The Canberra Hospital

## Conflict of interest

No

## Authors

1. Angus Turner, Lions Outback Vision
2. John Grigg, Save Sight Institute
3. Jocelyn Drinkwater, Lions Outback Vision

## Abstract

### Background:

Ophthalmology access in Australian rural communities is limited, resulting in high rates of preventable blindness. This prospective, randomised study is the first in Australia to examine whether artificially intelligent (AI) generated plain-language letters will improve patient communication in rural teleophthalmology.

### Methods:

This study integrated an AI scribing tool, i-scribe®, into optometry-facilitated rural ophthalmology telehealth clinics in Lions Outback Vision, WA. Adults attending teleophthalmology consultations from August to December 2025 were randomised 1:2 to standard care (no patient letter) or to the intervention group, which received an AI-generated, clinician-edited, plain-language summary letter after the consultation. Patient understanding was assessed via a Calgary–Cambridge–based telephone survey within two weeks. The Likert-scale outcomes were analysed using Mann–Whitney U tests.

### Result:

Sixty-one eligible patients were identified, of whom 55 (90.2%) consented, and 35 (63.6%) completed the study: 20 (AI-generated letter) vs 15 (control). The most common indication for consultation was pre-operative workup for cataract surgery (45%, n=16/35). Mean scores were high across both groups (all communication domains  $\geq 4/5$ ), with no statistically significant differences between groups and a borderline higher overall satisfaction in the intervention group ( $p = 0.05$ ). In the control group, 73% reported they would have liked to receive a plain-language summary letter, while in the intervention group, 90% expressed a wish to receive similar letters in other healthcare settings. Clinicians took a mean of 1.6 minutes to edit the AI-generated letters before sending them to patients.

### Conclusion:

Patients demonstrated a preference for receiving plain-language summary letters. The AI-generated letter required minimal clinician editing time, supporting AI-assisted letters as a scalable intervention to improve health literacy in rural telehealth.



## Abstract Title

Machine Learning Versus Traditional Risk Scores in Ophthalmic Diagnosis

## Contact

Dr Aditi Singh  
Townsville University Hospital

## Conflict of interest

No

## Authors

1. Weng Onn Chan, Adelaide University

## Abstract

### Background:

Machine learning (ML) models are increasingly used to diagnose ophthalmic conditions using imaging and clinical data, yet reported performance and methodological quality vary.

### Aim:

To synthesise diagnostic discrimination of ML models for ophthalmic conditions and summarise validation and reporting practices.

### Methods:

A comprehensive literature search of PubMed, Embase, Web of Science, and the Cochrane Library identified studies comparing ML algorithms with traditional risk scores for ophthalmic diagnosis. Two reviewers independently performed data extraction and quality assessment using PROBAST and GRADE. Meta-analysis was conducted using a linear mixed-effects model, with C-statistics as the primary measure of discrimination.

### Results:

Fourteen studies were included, reporting 36 distinct ML models across fundus photography, visual field testing, and other modalities. External or independent validation was reported in 7/14 studies. The pooled C-Statistic for ML models was 0.89 (95% CI 0.80-0.94,  $I^2 = 98.8\%$ ) compared to the 0.81 (95% CI 0.62-0.91,  $I^2 = 94.0\%$ ) ( $p=0.276$ ). The top-performing ML model achieved a C-Statistic of 0.97 (95% CI 0.95-0.99). Across the included studies, PROBAST indicated most studies were at high overall risk of bias, while GRADE certainty was most commonly moderate.

### Conclusion:

ML models show high overall diagnostic discrimination across ophthalmic conditions and, in available head-to-head comparisons outperform traditional risk scores, although the difference was not statistically significant. Despite some methodological limitations, ML models hold significant potential for enhancing preoperative risk stratification and guiding clinical decision-making. Future research should focus on prospective studies with external validation to confirm these findings and facilitate clinical implementation.



## Abstract Title

Supporting International Neuro-Ophthalmology Training Through Interactive Case-Based Learning

## Contact

Mr Tosin (Abdul-Rahman) Omotoso  
Medical Student, University of Sydney

## Conflict of interest

No

## Authors

1. Clare Fraser, University of Sydney
2. John Crompton, University of Adelaide

## Abstract

### Introduction:

Ophthalmology registrars and trainees in international settings may have limited exposure to neuro-ophthalmology presentations and multimodal imaging. Inspired by the international fellowship program of the not-for-profit organisation Sight For All, we developed an interactive web-based educational platform delivering real-world clinical cases through vignette-driven, image-based reasoning to enhance structured diagnostic thinking.

### Methods:

Neuro-ophthalmology cases curated by Professor John Crompton were converted into standardised modules covering history, examination, investigations, differential diagnosis and management. Platform development, case conversion, quiz design and proofreading were completed collaboratively with consultants and trainees. All images and results were de-identified and used with permission for educational purposes. Learners complete a case-linked quiz before diagnosis and management are revealed, with each quiz including mandatory items on diagnosis and management. Investigations, including fundus photographs, OCT, visual fields, CT and MRI, are embedded with click-to-enlarge viewing and highlighted key clues with explanatory rationales.

### Results:

A functional prototype was implemented with responsive case pages, image-viewing tools and auto-scored quizzes. The case library is expanding on a rolling basis with typical and novel presentations. Ten medical students and senior ophthalmology educators evaluated the platform for content quality and usability, providing structured feedback to refine the site.

### Conclusion:

This platform aims to extend clinically authentic neuro-ophthalmology education beyond tertiary centres and strengthen image interpretation and decision-making. Planned iterations include pre/post knowledge testing, confidence ratings, usability measures, retention assessment and analytics-based outcome evaluation.



## Abstract Title

Vision at Risk: A Multi-centre Study of Paediatric Idiopathic Intracranial Hypertension in NSW

## Contact

Dr Kate Bryce  
Unaccredited Registrar, Eye Surgery Associates, Orange

## Conflict of interest

No

## Authors

1. Manoj Menezes, Sydney Children's Hospital Network
2. Krishna Tumuluri, Sydney Children's Hospital Network

## Abstract

### Introduction:

Idiopathic intracranial hypertension (IIH) is defined by intracranial hypertension without an identifiable cause. This raised pressure can cause damage to the optic nerve and, if left untreated, can cause persistent visual impairment. Although widely studied in adults, it is less understood in paediatric patients.

### Methods:

Retrospective cohort study of paediatric patients diagnosed with IIH between January 2014 and December 2024, within the Sydney Children's Hospital Network.

### Results:

We present data from the first 38 patients (20 males, average age 11yrs) recruited into this study. There was no significant difference in the BMI between males and females at diagnosis. The most common symptoms were headaches and blurred vision. 92% of patients had optic nerve swelling on fundoscopy, and 24% had a cranial nerve VI palsy. 84% of patients had a lumbar puncture (LP) opening pressure (OP) $>28\text{cmH}_2\text{O}$ , 8% of patients had an OP $<28\text{cmH}_2\text{O}$  and for 8% of patients an OP was not obtained. 76% of patients were treated with acetazolamide, 16% were treated with acetazolamide and topiramate, and 5% were treated with topiramate. The median dose of acetazolamide was 12mg/kg/day and the median duration of medical treatment was 318 days. 8% of patients required surgical management to control intracranial pressures (external lumbar drain:2, ventriculoperitoneal shunt:1). In 1 patient the external lumbar drain was removed after 4 days due to persistent low pressure headache symptoms, and they later underwent bilateral optic nerve sheath fenestrations for IIH management. 16% of patients had a relapse of symptoms, occurring at a median of 81 days post cessation of medication.

### Conclusion:

Most children with IIH have a benign course with good response to medication, but a small number will require surgical intervention. We recommend treatment with acetazolamide for a year after diagnosis, and monitoring for another year assessing for relapse.



## Abstract Title

Micropulse Transscleral Cyclophotocoagulation for IOP Reduction: A Retrospective Study

## Contact

Ms Lily Muir  
Medical Student, UNSW

## Conflict of interest

No

## Authors

1. Ashish Agar, POWH

## Abstract

### Purpose:

To evaluate the intraocular pressure (IOP) lowering efficacy and safety of micropulse transscleral cyclophotocoagulation (MP-TSCPC) in patients with glaucoma over a 12-month period.

### Methods:

A retrospective review was conducted on 60 MP-TSCPC naïve eyes across two Sydney clinics. IOP and medication burden were recorded at baseline and at 1-, 3-, 6-, and 12-months post-treatment. The incidence of adverse events or retreatment were also recorded. Paired t-tests compared variables to baseline. Treatment success was measured with Kaplan-Meier survival analysis was defined as  $\geq 20\%$  IOP reduction, or a stable IOP with a reduction in glaucoma medication

### Results:

The mean baseline IOP was  $26.2 \pm 10.1$  mmHg ( $n = 60$ ). At 1 month ( $n = 52$ ), IOP was  $21.3 \pm 11.0$  mmHg ( $-18.4\%$ ;  $p < 0.001$ ). At 3 months ( $n = 42$ ), IOP was  $19.8 \pm 10.2$  mmHg ( $-20.9\%$ ;  $p < 0.001$ ). At 6 months ( $n = 38$ ), mean IOP was  $21.2 \pm 9.9$  mmHg ( $18.4\%$  reduction;  $p < 0.001$ ). At 12 months ( $n = 29$ ), mean IOP was  $18.9 \pm 9.0$  mmHg ( $21.4\%$  reduction;  $p < 0.001$ ). The mean pre-operative medication burden ( $n = 60$ ) was  $2.6 \pm 0.09$ . Medication burden was reduced from baseline at each timepoint:  $2.1 \pm 1.0$  ( $p < 0.001$ ),  $2.2 \pm 0.09$  ( $p = 0.013$ ),  $2.2 \pm 0.09$  ( $p < 0.001$ ) and  $2.1 \pm 0.08$  ( $p = 0.012$ ) respectively. Kaplan-Meier analysis estimated success of 58.3% at 1 month, 51.7% at 3 months, 37.4% at 6 months, and 33.5% at 12 months. Median time-to-failure was 6.0 months. Adverse effects were mostly transient, however, there was one case of hypotony with maculopathy three months post MP-TSCPC and one corneal ulcer one week following treatment.

### Conclusions:

MP-TSCPC is an effective and safe option for IOP lowering without the need for invasive surgery.



## Abstract Title

Prognostic Value of Baseline Kmax for Corneal Cross-Linking in Keratoconus: A Systematic Review

## Contact

Dr Elinor Wang  
Sydney Medical School, Faculty of Medicine and Health, University of Sydney

## Conflict of interest

No

## Authors

1. Catherine Ouyang, Sydney Eye Hospital
2. Himal Kandel, Sydney Medical School, Faculty of Medicine and Health, University of Sydney
3. Stephanie Watson, Sydney Medical School, Faculty of Medicine and Health, University of Sydney

## Abstract

### Introduction:

Corneal collagen cross-linking (CXL) is widely performed to reduce progression of keratoconus, particularly in patients at risk of visual deterioration. Our systematic review aimed to evaluate whether preoperative factors predict outcomes post-CXL. This study examined the role of pre-operative Kmax, a common metric of keratoconus severity, in predicting CXL outcomes.

### Methods:

A systematic search of six databases (PubMed, Medline, Embase, Scopus, Web of Science, and Cochrane) was conducted in August 2025. Inclusion criteria were studies evaluating predictive factors for outcomes following conventional (Dresden protocol) CXL with a minimum 6-month follow-up. Key outcomes were post-CXL progression, change in Kmax, and change in CDVA.

### Results:

Fifty-one studies assessed predictive factors following CXL. Of these, 23 specifically reported the effect of baseline Kmax. Eight cohort studies evaluated the association between baseline Kmax and change in CDVA, with mixed findings. Several univariate analyses reported a negative association, whereas multivariate analyses consistently found no independent association. Seventeen studies examined baseline Kmax and change in Kmax with heterogeneous results across study designs and follow-up durations. A restricted meta-analysis of five studies with 1-year univariate correlations demonstrated a small, non-significant negative association ( $r = -0.09$ , 95% CI  $-0.24$  to  $0.07$ ;  $I^2 = 61.7\%$ ). Five studies evaluated progression outcomes which also found inconsistent results.

### Conclusion:

Baseline Kmax is commonly investigated as a prognostic factor following CXL, but there is no consistent independent association with post-CXL visual or topographic outcomes. Observed relationships in univariate analyses may be the result of residual confounding variables. In the future, improved identification of reliable prognostic factors can



## Abstract Title

Improving Pinhole VA Documentation in ED Referrals: A Simple Intervention

## Contact

Dr Jessie Cai  
Sydney and Sydney Eye Hospital

## Conflict of interest

No

## Authors

1. Jessie Cai, Sydney and Sydney Eye Hospital

## Abstract

### Purpose:

To evaluate whether simple poster-based prompts in the emergency department (ED) eye room improve rates of visual acuity (VA) and pinhole VA documentation in patients referred to Ophthalmology.

### Methods:

A retrospective observational study was conducted at Prince of Wales Hospital ED from November 2024 to January 2025 following implementation of two posters prompting clinicians to perform pinhole assessment. All ED presentations referred to Ophthalmology were included. Documentation of VA and pinhole VA (when indicated) was compared with a historical cohort from October to December 2023.

### Results:

Following implementation, the proportion of referrals without any documented VA decreased from 16.7% to 7.6%. Among cases where pinhole VA was indicated, omission decreased from 74.2% to 62.2%. The proportion of patients reviewed by Ophthalmology increased from 81.8% to 85.0%. Improvements were observed across most clinician groups, although overall compliance with pinhole assessment remained suboptimal.

### Conclusions:

A simple poster-based intervention was associated with improved documentation of VA and pinhole VA in ED referrals to Ophthalmology. However, omission rates remain high, indicating the need for additional educational and system-level strategies. Accurate VA and pinhole assessment are essential for appropriate triage and timely ophthalmic care.



## Abstract Title

Translational Challenges in Limbal Stem Cell Deficiency: Implications for Ocular Surface Crisis

## Contact

Dr Jessie Cai  
Sydney and Sydney Eye Hospital

## Conflict of interest

No

## Authors

1. Jessie Cai, Sydney and Sydney Eye Hospital

## Abstract

### Purpose:

To evaluate the clinical translational relevance of animal models of limbal stem cell deficiency (LSCD), a vision-threatening ocular surface disorder commonly arising from acute injury and representing a significant ophthalmic challenge.

### Methods:

A systematic review of 105 primary studies investigating animal models of LSCD was performed. Study characteristics, methods of disease induction, reporting quality (using ARRIVE guidelines), and translational relevance to human disease were assessed.

### Results:

Most studies (97%) successfully replicated an LSCD-related aetiology; however, methodological limitations were common. Over 60% of studies lacked sufficient detail for reproducibility, and adverse events were infrequently reported. While clinical signs such as corneal neovascularisation and stromal haze were commonly described, key diagnostic features and confirmatory investigations were inconsistently applied. Only a minority of studies utilised adjunctive diagnostic techniques or in vivo imaging. Variability in disease induction and incomplete reporting limited the ability to reliably translate findings to human LSCD.

### Conclusions:

LSCD represents a severe ocular surface crisis, often resulting from chemical or traumatic injury, with significant implications for vision. While animal models are essential for understanding disease mechanisms and developing therapies, their translational value is limited by inconsistent methodology and reporting. Improved standardisation and incorporation of clinically relevant diagnostic measures are required to better align preclinical models with human disease and advance management of this challenging condition.



## Abstract Title

Prevalence of Cataract in Australia: The Australian Eye and Ear Health Survey

## Contact

Dr Richard Kha  
Resident, Liverpool Hospital

## Conflict of interest

No

## Authors

1. Gerald Liew, Gerald Liew
2. Gary Low, Westmead Institute for Medical Research
3. Yasemin Kapucu, Westmead Institute for Medical Research
4. Andrew White, Westmead Hospital
5. Paul Mitchell, Westmead Institute for Medical Research

## Abstract

### Introduction:

There is an increasing burden of vision impairment from cataract due to the ageing Australian population. This study aims to estimate prevalence of cataract in Indigenous and non-Indigenous adults aged 50+ years.

### Methods:

Nationwide, cross-sectional, population-based survey of 4519 Australians (3902 non-Indigenous, 617 Indigenous) aged 50+ years recruited from 30 randomly selected sites stratified by remoteness (73.7% response). Cataract was diagnosed from post-mydriasis anterior segment slit lamp exam and classified according to the Lens Opacification Classification III grading system. Any cataract was defined as nuclear, cortical or posterior subcapsular cataract score of  $\geq 4$ ,  $\geq 2$ , or  $\geq 1$ , respectively. Visually significant cataract was assigned in eyes with best-corrected visual acuity worse than 6/12, with cataract being the primary cause of vision loss in that eye.

### Results:

The age-standardised prevalence of any cataract was 35.0% (95%CI:30.7-39.9) for Indigenous and 36.5% (95%CI:34.7-38.3) for non-Indigenous Australians. For visually significant cataract, the prevalence was 7.9% (95%CI:5.8-10.6) in Indigenous and 3.4% (95%CI:2.9-4.0) in non-Indigenous Australians. After adjusting for age and sex, Indigenous participants were 1.8x more likely to have any cataract, and 2.5x more likely to have visually significant cataract, compared to non-Indigenous participants. In total, 26.2% of participants had prior cataract surgery in at least one eye, and 54.3% of those with visually significant cataract had a self-reported history of cataract. Age, living in remote areas, myopia $\geq 3$ D and diabetes were associated with increased risk of visually significant cataract, whereas tertiary education and private health insurance were protective factors.

### Conclusion:

Ongoing work is needed to develop sustainable cataract surgery services in Indigenous and remote communities. Policies to improve cataract surgery rates are essential to limit cataract-related vision loss.



## Abstract Title

Visual outcomes with different treatments for MOG optic neuritis: A systematic review

## Contact

Dr Lydia Lam  
Resident, Dubbo Base Hospital

## Conflict of interest

No

## Authors

1. Stephen Bacchi, Lyell McEwin Hospital
2. Aashray Gupta, John Hunter Hospital
3. WengOnn Chan, Royal Adelaide Hospital
4. Sumu Simon, Royal Adelaide Hospital
5. Susan Mollan, Queen's University

## Abstract

### Introduction:

Myelin oligodendrocyte glycoprotein antibody-associated optic neuritis (MOG-ON) is an inflammatory demyelinating disorder often linked to severe visual impairment and a relapsing course. Clear evidence-based recommendations for optimal treatment remain limited, particularly regarding long-term visual outcomes. This review aimed to evaluate the existing evidence regarding visual outcomes following different therapeutic approaches in MOG-ON.

### Methods:

A systematic search of PubMed, EMBASE and Cochrane Library databases was conducted on September 2025 for peer-reviewed studies reporting visual outcomes in patients with MOG-ON who received therapeutic interventions. Outcomes included best-corrected visual acuity, treatment regimen and relapse rates.

### Results:

The initial search strategy identified 4005 studies, of which 30 fulfilled the inclusion criteria, comprising 875 MOG-ON patients (1172 eyes) who received therapeutic intervention. High-dose intravenous methylprednisolone was the most common acute therapy and was generally associated with significant short-term visual improvement. Plasma exchange and intravenous immunoglobulin (IVIG) were used in severe or steroid-refractory cases, with most patients achieving good visual recovery. Relapses were common, particularly during corticosteroid tapering or withdrawal. Maintenance therapies including rituximab, azathioprine, mycophenolate mofetil, methotrexate and IVIG showed variable effectiveness in relapse prevention.

### Conclusions:

While no randomised interventional studies have evaluated the effect of specific therapies on visual outcomes in MOG-ON, observational data suggests that high-dose intravenous corticosteroids are associated with favourable short-term visual recovery. Maintenance immunotherapy may reduce relapse risk, but comparative effectiveness for long-term visual preservation remains uncertain. Early recognition and prompt treatment are essential as delays may worsen visual outcomes.



## Abstract Title

Interviews to Instrument: Developing a Keratoconus Quality of Life Patient Reported Outcome Measure

## Contact

Dr Leo Fan  
Resident, WSLHD

## Conflict of interest

No

## Authors

1. Leo Fan, Westmead Hospital
2. Himal Kandel, Sydney Medical School, Faculty of Medicine and Health, The University of Sydney, Sydney NSW
3. Stephanie Watson, Corneal Unit, Sydney Eye Hospital Sydney, NSW

## Abstract

### Introduction:

To translate patient derived qualitative data of keratoconus and its impact on quality of life (QoL) into a draft, domain-structured PROM for subsequent psychometric validation and later implementation.

### Methods:

Ethics approval was obtained from the Royal Prince Alfred Hospital Research Ethics and Governance Office (Project Number: 2023/ETH00410). Adults ( $\geq 18$  years) with clinician-diagnosed keratoconus were recruited from Sydney Eye Hospital (NSW, Australia). Semi-structured interviews (mean 23 minutes duration) were audio-recorded and transcribed verbatim. Phenomenological analysis was performed using inductive and deductive processes until thematic saturation. An initial code bank was cleaned (duplicate and categorisation code removal) and mapped to a consensus-defined QoL framework, informed by WHOQOL and ophthalmology-relevant domains. Codes were translated into candidate items using prespecified item-writing criteria (clarity, conciseness, neutrality, relevance, specificity, completeness). Items were subsequently reduced through staged expert consensus review.

### Results:

Thirty-three patients (median age 37 years, range 18-65; majority male  $n=25$ ) were recruited. Transcriptions generated 2,551 coded quotes and 1,113 initial codes. Thematic saturation was reached at interview 31, with two additional interviews undertaken to confirm completeness. Following cleaning and domain mapping, 663 candidate items were produced. Dual-author consensus refinement reduced the pool to 348 items, followed by full-author consensus to a final 89-item draft questionnaire across 10 domains (symptoms; activity limitation; driving; mobility; emotional; health concerns; social; convenience; economic; coping behaviours). Items use a 5-option response scale.

### Conclusion:

A patient-derived, consensus-structured pilot keratoconus QoL PROM was produced by sequence creation. Next steps include validation and subsequent registry implementation.



## Abstract Title

Severe cutaneous adverse reaction caused by NSAID eye drops nepafenac (Ilevro)

## Contact

Dr Youssef Latash  
Ophthalmology Principal House Officer, Cairns and Hinterland Hospital and Health Service

## Conflict of interest

No

## Authors

1. Stephen O'Hagan, Cairns and Hinterland Hospital and Health Service

## Abstract

### Background:

Acute localised exanthematous pustulosis (ALEP) is a rare variant of acute generalised exanthematous pustulosis and is classified among severe cutaneous adverse reactions. It presents with the abrupt onset of sterile, non-follicular pustules on an erythematous base, typically drug-induced and accompanied by fever and neutrophilia. Although systemic medications are common triggers, reactions to topical ophthalmic agents are uncommon.

### Case Presentation:

A 72-year-old man developed a febrile pustular eruption involving the face, scalp, neck and upper back ten days after uncomplicated cataract surgery. Postoperatively he was prescribed topical nepafenac 0.3% (Ilevro), chloramphenicol and prednisolone/phenylephrine. He initially presented with unilateral periorbital oedema and conjunctival injection and was treated for presumed preseptal cellulitis. Within 24 hours he developed rapidly progressive, painful, non-follicular pustules with fever (38.5°C), neutrophilia and markedly elevated inflammatory markers. Microbiological investigations, including bacterial cultures and HSV/VZV PCR, were negative. Skin biopsy demonstrated subcorneal pustules with a mixed neutrophilic and eosinophilic infiltrate. Dermatologic assessment supported ALEP. Nepafenac was ceased and systemic corticosteroids commenced, resulting in rapid clinical improvement and subsequent desquamation.

### Conclusion:

This case meets clinical criteria for ALEP and implicates topical nepafenac as the most likely trigger following exclusion of alternative causes. Severe pustular eruptions secondary to ophthalmic NSAIDs are exceedingly rare. To our knowledge, this is the first reported case associated with nepafenac. Early recognition and withdrawal of the offending agent are essential to optimise outcomes.



## Abstract Title

An Aggressive Case of Persistent Placoid Maculopathy

## Contact

Dr Kate Bryce  
Unaccredited Registrar Eye Surgery Associates Orange

## Conflict of interest

No

## Authors

1. Matthew Hao Lee, North West Eyes
2. Richard Symes, Sydney Eye Hospital

## Abstract

### Introduction:

Persistent placoid maculopathy (PPM) is a rare condition considered to be on the serpiginous choroiditis-acute posterior multifocal placoid pigment epitheliopathy (APMPPE) disease continuum. We describe an aggressive case that required management with three immunosuppressive agents.

### Methods:

A 15-year-old male presented with a 3-day history of left eye painless vision loss. Visual acuities (VA) were 6/7.5 in the right eye and 6/120 in the left eye, with normal intraocular pressures bilaterally. The anterior segments were unremarkable, however the left posterior segment examination revealed +1 vitritis, mild papillitis and multiple plaque-like chorioretinal lesions with macular involvement. OCT demonstrated intraretinal fluid, outer retinal hyperreflectivity, and retinal pigment epithelium (RPE) elevation. As the initial working diagnosis was toxoplasmosis retinochoroiditis, he was commenced on oral sulfamethoxazole/trimethoprim twice daily and topical prednefrin forte four times daily. After an infectious aetiology was deemed unlikely via blood tests, he was commenced on oral prednisolone 80mg daily with PPI cover two days later.

### Results:

Despite treatment, his left eye VA reduced to count fingers (CF) and the chorioretinal lesions continued to progress. Given that the patient weighed 110kg, the oral prednisolone dose was increased to 110mg daily, and then again two weeks later to 125mg daily. He was also commenced on adalimumab 40mg subcutaneously every fortnight, methotrexate 10mg daily and a prophylactic dose of sulfamethoxazole/trimethoprim (1 tablet three times per week). His left eye VA improved (VA 6/186 PH 6/24) and the chorioretinal lesions stabilised on this management.

### Conclusion:

This case highlights an aggressive variant of PPM that required a supratherapeutic dose of prednisolone (above 1mg/kg), adalimumab and methotrexate to control.



## Abstract Title

Efficacy and Safety of Hydrus: Five-Year Outcomes from a Real-World Australian Registry Study

## Contact

Dr Jack Power  
SRMO, Sydney and Sydney Eye Hospital

## Conflict of interest

No

## Authors

1. Leo Fan, Department of Ophthalmology, Westmead Hospital
2. Brindhan Tharmarajah, Department of Ophthalmology, Prince of Wales Hospital
3. Andrew White, Department of Ophthalmology, Westmead Hospital
4. Ashish Agar, Department of Ophthalmology, Prince of Wales Hospital

## Abstract

### Background:

To evaluate the long-term real-world efficacy and safety of the Hydrus Microstent for patients with glaucoma treated in routine clinical practice in Sydney, Australia.

### Methods:

This retrospective descriptive case series included glaucomatous eyes undergoing Hydrus Microstent implantation, either as a standalone procedure or combined with cataract surgery, between 2016 and 2025. Data were collected from Westmead hospital and two private ophthalmology clinics in Western Sydney and entered into the Fighting Glaucoma Blindness! Registry. Outcomes assessed intraocular pressure (IOP), number of antiglaucoma medications, visual field (VF) parameters, best-corrected visual acuity, intraoperative and postoperative complications, and additional glaucoma procedures. Follow-up was conducted out to five years. Paired t-tests were used to compare baseline and postoperative outcomes, with statistical significance defined as  $p < 0.05$ . Kaplan–Meier survival analysis was performed to assess absolute (maintenance of IOP  $\leq 18$  mmHg) and qualified (maintenance of IOP  $\leq 18$  mmHg and no topical medications) survival post-implantation.

### Results:

139 eyes from 117 patients were included. At five years, mean IOP was significantly reduced from  $17.6 \pm 6.6$  mmHg preoperatively to  $13.7 \pm 3.6$  mmHg ( $p = 0.0002$ ), and mean number of antiglaucoma medications decreased from  $2.2 \pm 1.4$  to  $1.3 \pm 1.3$  ( $p = 0.0023$ ). Visual field indices remained stable at five years. Kaplan–Meier analysis demonstrated absolute survival of 69.8% and qualified survival of 20.9% at five years. No intraoperative complications were recorded. Postoperative complications were infrequent and predominantly benign.

### Conclusions:

In a real-world Australian cohort Hydrus implantation, with or without concomitant cataract surgery, was associated with sustained reductions in IOP and medication burden with a favourable safety profile over 5 years.



## Abstract Title

Machine Learning Outperforms Traditional Analysis of mfERG in Hydroxychloroquine Retinopathy

## Contact

Dr Charles Walker  
SRMO, RNSH

## Conflict of interest

No

## Authors

1. Stuart Eiffert, USYD
2. Peter McCluskey, USYD
3. Elisa Cornish, USYD

## Abstract

### Purpose:

Hydroxychloroquine (HCQ) retinopathy is a potentially irreversible cause of vision loss, making early detection essential. Multifocal electroretinography (mfERG) is widely used for functional screening, typically interpreted using ring-ratio thresholds. We evaluated whether machine learning improves detection of HCQ toxicity compared with conventional ring-ratio analysis using seven-ring mfERG data.

### Methods:

A retrospective case–control study analysed mfERG recordings from patients with HCQ exposure at a tertiary ophthalmology centre. HCQ toxicity was defined according to Royal Australian and New Zealand College of Ophthalmologists screening guidelines. mfERG responses were recorded using a 103-hexagon stimulus and grouped into seven concentric rings. Diagnostic performance of traditional ring amplitude ratios (R1/R2–R7, R5/R3, R5/R4) was assessed using receiver operating characteristic analysis. Machine learning classifiers including Random Forest, Support Vector Machine, and Logistic Regression models were trained using ring amplitude and waveform features with stratified cross-validation.

### Results:

Fifty-two patients (100 eyes) were included, with 57 eyes meeting criteria for HCQ toxicity. Among traditional metrics, the R1/R2 ratio demonstrated the strongest discrimination (AUC 0.71). Threshold-based ring-ratio analysis achieved a sensitivity of 67% and specificity of 74%. Machine learning models demonstrated substantially improved performance. The Random Forest classifier achieved a sensitivity of 96.5% and specificity of 86%, corresponding to a balanced accuracy of 0.91.

### Conclusions:

Machine learning analysis of mfERG substantially improves detection of HCQ retinal toxicity compared with traditional ring-ratio thresholds. Computational analysis of electrophysiological data significantly enhances screening accuracy for patients receiving long-term hydroxychloroquine therapy.



## Abstract Title

TimorROP: Preventing Childhood Blindness in Timor-Leste

## Contact

Dr Charles Walker  
Dr, University of Sydney

## Conflict of interest

No

## Authors

1. James Smith, RNSH

## Abstract

### Purpose:

To describe the establishment of Timor-Leste's first retinopathy of prematurity (ROP) screening and treatment pathway, a major step in preventing avoidable childhood blindness through global ophthalmology partnership.

### Methods:

Building on a longstanding collaboration between Royal North Shore Hospital, Sydney, and Hospital Nacional Guido Valadares, Dili, a Timorese-Australian ophthalmology team commenced the first dedicated ROP ward round in Timor-Leste on 15 July 2025. At-risk premature infants in the neonatal unit were examined using local binocular indirect ophthalmoscopy and an ICON digital retinal camera on loan from Australia. Clinical findings, imaging, and treatment logistics were integrated to create a sustainable local model of care.

### Results:

Eight premature infants (30-40 weeks' gestation; birthweight 1030-1830 g) were screened during the inaugural round. One infant (13%) was diagnosed with ROP. On 23 October 2025, the first ROP treatment in Timor-Leste was successfully delivered by a local Timorese ophthalmologist, with bilateral intravitreal bevacizumab administered after medication was urgently transported from Darwin. This infant later underwent complex vitreoretinal surgery in Sydney and retained vision. In parallel, several previously unscreened children born prematurely were identified with established blindness, highlighting the consequences of delayed detection.

### Conclusions:

TimorROP represents a landmark achievement in global ophthalmology and neonatal eye care in Timor-Leste. The program demonstrates how long-term international partnership, local clinician leadership, and digital imaging can translate into durable systems for early detection, timely treatment, and prevention of lifelong blindness. The transition to regular weekly screening rounds in 2026 marks the beginning of a sustainable national strategy to preserve sight for future generations.



## Abstract Title

From Interviews to Instrument: Developing a Keratoconus Quality of Life PROM

## Contact

Dr Leo Fan  
Resident, Westmead Hospital

## Conflict of interest

No

## Authors

1. Himal Kandel, Faculty of Medicine and Health, The University of Sydney
2. Stephanie Watson, Sydney Eye Hospital

## Abstract

### Introduction:

To translate patient derived qualitative data of keratoconus and its impact on quality of life (QoL) into a draft, domain-structured PROM for subsequent psychometric validation and later implementation.

### Methods:

Ethics approval was obtained from the Royal Prince Alfred Hospital Research Ethics and Governance Office (Project Number: 2023/ETH00410). Adults ( $\geq 18$  years) with clinician-diagnosed keratoconus were recruited from Sydney Eye Hospital (NSW, Australia). Semi-structured interviews were audio-recorded and transcribed verbatim. Phenomenological analysis was performed using inductive and deductive processes. An initial code bank was cleaned (duplicate and categorisation code removal) and mapped to a consensus-defined QoL framework, informed by WHOQOL and ophthalmology-relevant domains. Codes were translated into candidate items using prespecified item-writing criteria (clarity, conciseness, neutrality, relevance, specificity, completeness). Items were subsequently reduced through staged expert consensus review.

### Results:

Thirty-three patients (median age 37 years, range 18-65; majority male  $n=25$ ) were recruited, with a median time since diagnosis of 13 years (range: 1-41). All four Amsler-Krumeich stages of keratoconus were represented. Transcriptions generated 2,551 coded quotes and 1,113 initial codes. Thematic saturation was reached at interview 31. Following cleaning and domain mapping, 663 candidate items were produced. Dual-author consensus refinement reduced the pool to 348 items, followed by full-author consensus to a final 89-item draft questionnaire across 10 domains (symptoms; activity limitation; driving; mobility; emotional; health concerns; social; convenience; economic; coping behaviours).

### Conclusion:

A patient-derived, consensus-structured pilot keratoconus QoL PROM was produced by sequence creation. Next steps include validation, and registry implementation.



## Abstract Title

: 2 Year Outcomes of MINiject Supraciliary implantation in Australia

## Contact

Dr Leo Fan  
Resident, Westmead Hospital

## Conflict of interest

No

## Authors

1. Simon Phipps, Goodwood Eye Centre
2. Jason Cheng, Sydney Eye Hospital
3. Ashish Agar, Marsden Eye Specialists
4. Chih-Hung Kuo, Capital Ophthalmology
5. Andrew White, Department of Ophthalmology, Westmead Hospital

## Abstract

### Introduction:

To evaluate the real-world performance of MINiject supraciliary minimally invasive glaucoma device in Australia.

### Methods:

Data from 212 eyes of 176 patients who underwent MINiject implantation, with or without phacoemulsification, were analysed. Primary outcomes were intraocular pressure (IOP) and medication burden at last review. Secondary outcomes included surgical success, defined as IOP reduction of at least 20% from baseline, IOP between 6-21 mmHg, and no further glaucoma operation. Additional outcomes included monthly postoperative IOP, medication burden, visual acuity, adverse events, and reoperations.

### Results:

A total of 212 eyes from 176 patients were included. Follow up duration ranged from 1 -792 days. Mean age was  $69.7 \pm 18.4$  years and 50% were female. Combined phacoemulsification was performed in 134/212 eyes (63.2%), 148/212 eyes (69.8%) had primary open-angle glaucoma, and 91/212 eyes (42.9%) were surgery-naïve. Mean baseline IOP was  $19.2 \pm 7.5$  mmHg and baseline medication burden was  $2.5 \pm 1.4$ . At last review, mean IOP reduced to  $12.9 \pm 5.3$  mmHg and medication burden to  $1.0 \pm 1.3$  (both  $p < 0.05$ ). Visual acuity remained stable (69.7 to 70.4,  $p = 0.4$ ). Hypphaema was the most common complication, followed by device malposition. Thirty eyes underwent further surgery, most commonly device revision.

### Conclusion:

In this real-world Australian multicentre series, MINiject was associated with significant reductions in IOP and medication burden, with stable visual acuity at last review. Device malposition and revision were notable postoperative issues. The frequency of revision may reflect a learning curve associated with early adoption of this newer supraciliary implant



## Abstract Title

Histopathological validation of a pachyvessel: Clinicopathological correlation in a human donor eye

## Contact

Dr Anthony Barrett

St. Vincent's Hospital, Darlinghurst, NSW 2010, Australia and School of Medicine, University of Notre Dame, Sydney,

## Conflict of interest

No

## Authors

1. Alessandro Invernizzi, Save Sight Institute, Faculty of Medicine and University of Milan Health, The University of Sydney, Sydney, NSW, Australia and Department of Biomedical and Clinical Science, Milan, Lombardy, Italy
2. Hemal Mehta, Save Sight Institute, Faculty of Medicine and Health, The University of Sydney, Australia and The University of Notre Dame Australia, Institute for Health Research, Sydney,
3. Victoria Pye, School of Clinical Medicine, University of NSW, Sydney, Australia and Anatomical Pathology, St Vincent's Hospital, Darlinghurst,
4. Svetlana Cherepanoff, School of Clinical Medicine, University of NSW, Sydney, Australia and Anatomical Pathology, St Vincent's Hospital, Darlinghurst, Australia and School of Medicine, University of Notre Dame, S

## Abstract

### Introduction:

Pachychoroid disease is predominantly defined by imaging, including enhanced depth imaging optical coherence tomography (EDI-OCT). As the histopathology of "pachyvessels" remains poorly validated, it is unclear whether these represent benign anatomical variants, or structurally remodelled vessels associated with inner choroidal compromise. This study provides a histological anchor for pachychoroid disease by correlating ex-vivo imaging with serial histopathology in a pachyvessel eye.

### Methods:

A human donor eye from a 79-year-old male (NSW Tissue Bank) underwent ex-vivo analysis with colour fundus photography (CFP) and EDI-OCT to identify features consistent with pachyvessel disease. The globe was bisected, paraffin embedded, serial sections stained, and light microscopic findings correlated with ex-vivo imaging.

### Results:

CFP confirmed a pachyvessel inferotemporal to the macula, without haemorrhage or pigmentary disturbance. EDI-OCT identified a large-calibre hyporeflective vessel with focal choroidal thickening. Histology revealed a dilated, tortuous Haller's layer vessel exhibiting mural hyalinisation, absence of a complete internal elastic lamina, and associated attenuation of Sattler's layer and the choriocapillaris. The overlying retinal pigment epithelium showed vacuolation and focal detachment. Bruch's membrane was intact and age appropriate. The neurosensory retina was unremarkable. No macular neovascularisation, soft drusen, or basal laminar deposits (BLamD) were identified.

### Conclusion:

We provide histological evidence that a clinically identified pachyvessel corresponds to a structurally altered Haller's layer vessel with associated inner choroidal disruption. The absence of neovascularisation or AMD-associated deposits supports a non-exudative pachychoroid phenotype in this case. These findings support ongoing clinicopathological efforts to understand how such structural features influence disease process within the pachychoroid spectrum.



## Abstract Title

Microperimetry test repeatability for assessment of macular vision in healthy eyes over 12 months

## Contact

Dr Alexander Jessup  
Unaccredited Registrar, Sydney Retina

## Conflict of interest

No

## Authors

1. Long Phan, Cureos
2. Thomas Hong, Cureos
3. Patrick Chang, Cureos
4. Andrew Chang, Sydney Retina

## Abstract

### Purpose:

Microperimetry repeatability over 12 months is clinically important. The study examined test-retest repeatability of Macular Integrity Assessment (MAIA) in healthy eyes.

### Methods:

A retrospective cohort study of 103 healthy fellow eyes in patients with epiretinal membranes. MAIA macular threshold sensitivity tests were performed at baseline, 1, 3, 6 and 12 months. A 4-2 step testing strategy was used in foveal-centred 37-point 10 O radial scans. One-way ANOVA and Bland-Altman plots of pointwise and regional zones (ETDRS quadrants, foveal, para and perifoveal regions) were used to determine absolute macular threshold sensitivity.

### Results:

Mean age was 68.72 (9.89 SD). Mean macular sensitivities were 24.50 dB (0.96 SD) at baseline, 25.23 dB (0.84 SD) at 1 month, 24.70 dB (0.95 SD) at 3 months, 24.50 dB (0.84 SD) at 6 months, and 24.08 dB (1.08 SD) at 12 months. One-way ANOVA comparing mean pointwise sensitivities to baseline at all timepoints showed statistically significant reductions from baseline dB ( $p < 0.05$ ): 1 month ( $F(1,17) = 12.02$ ,  $p = 0.0008$ ), 3 months ( $F(1, 72) = 5.25$ ,  $p = 0.02$ ), 6 months ( $F(1,72) = 12.66$ ,  $p = 0.0006$ ) and 12 months ( $F(1,72) = 32.74$ ,  $p = 0.002$ ). Bland Altman plots comparing pointwise mean sensitivities to baseline showed negative mean differences at all time intervals: at 1 month mean difference (bias) was -0.73 (0.35 SD) (95% CI: -0.13, -1.32); at 3 months -0.18 Bias (0.18 SD) (95% CI: 0.13, -0.49); at 6 months -0.66 Bias (0.27 SD) (95% CI: -0.20, -1.12); and at 12 months -1.29 Bias (0.58 SD) (95% CI: -0.32, -2.27).

### Conclusion:

Minor improvement in macular sensitivity in healthy eyes measured with MAIA over 12 months suggests a mild learning effect. This could be mitigated by repeated tests during clinical visits prior to long follow-up periods. Microperimetry is a clinically useful and reproducible test of macular vision.