Centre for Eye Health

ATLAS LITERATURE REVIEW

Issue 3 • Feb 2022

Welcome to the third issue of Centre for Eye Health's ATLAS Literature Review. Each quarter we'll be bringing you reviews from our pick of the latest literature as part of your ATLAS subscription.

Myopia and glaucoma: the higher the Rx, the higher the risk

Prepared by Elisa Wang and Sharon Ho

Summary: Myopia has been established for many years as a risk factor for developing glaucoma. This study however analysed previously published literature to determine if a higher degree of myopia increased the risk of developing open angle glaucoma. A total of 24 studies across 11 countries were analysed.

Key findings: Individuals with any degree of myopia have almost double the risk of developing open angle glaucoma compared to someone who does not have myopia. Importantly, the risk of glaucoma increases by approximately 20% for each 1 dioptre increase in myopia. In particular, the risk accelerates at around -6 dioptres of myopia.

Clinical applications: Glaucoma is often difficult to detect in myopes due to the associated tilted and obliquely inserted discs. As a result, given this and the established increased risk, clinicians should closely assess and monitor myopic patients for the development of open angle glaucoma, especially those greater than -6 dioptres.

Reference: Ha A, Kim CY, Shim SR, et al. Degree of Myopia and Glaucoma Risk: A Dose-Response Meta-analysis. American Journal of Ophthalmology. 2021; 236; 107-119

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In this issue:

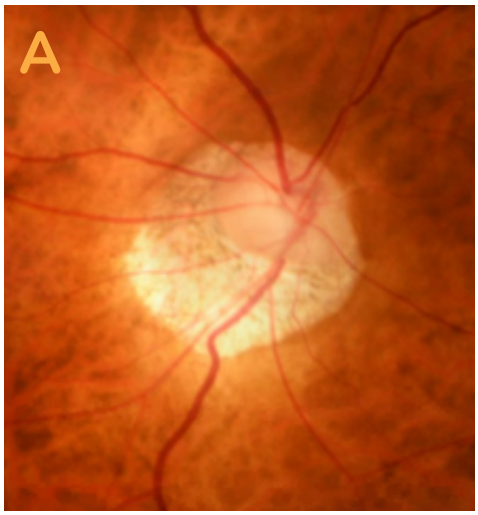
Prepared by Sharon Ho and Elisa Wang

Our work would not be possible without the generosity of Guide Dogs NSW/ACT and their supporters.

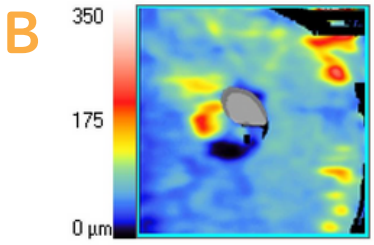
Your purchase of ATLAS and our other educational materials helps to support Centre for Eye Health, and Guide Dogs NSW/ACT, and for that we are incredibly grateful.

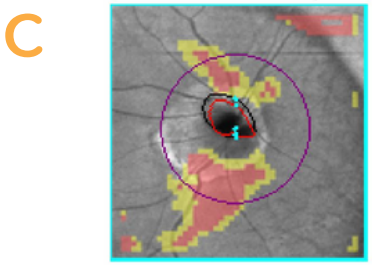
Guide Dogs.

Centre for Eye Health case study: A 73 year old male with high myopia (-8.50DS), visual acuity of 6/7.5+ and advanced primary open angle glaucoma in the right eye.

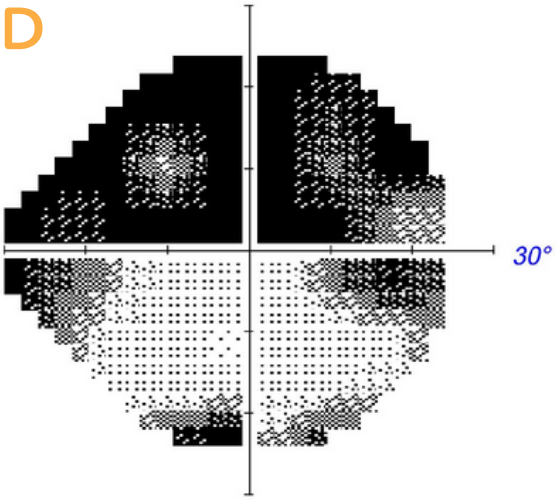


A) Colour fundus photo (right optic nerve)





B) Cirrus RNFL thickness map
C) Cirrus RNFL deviation map



D) Central 24-2 SITA Faster visual field

The patient's small and tilted disc related to their high myopia contributes to their risk of glaucoma, but makes the diagnosis and management challenging

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Multicolour imaging is better than 'red-free' at detecting glaucomatous RNFL defects

Prepared by Sharon Ho and Elisa Wang

Summary: This study compared the diagnostic performance of multicolour imaging to that of conventional fundus photography for the detection of retinal nerve fibre layer (RNFL) defects in myopic eyes with glaucoma. Multicolour imaging was generated by confocal scanning laser ophthalmoscopy and consisted of a composite multicolour image, green-reflectance and blue-reflectance images. Conventional imaging consisted of fundus and red-free RNFL photographs.

Key findings: Multicolour imaging was significantly better than either fundus or red-free RNFL photographs at detecting RNFL defects. Green and blue reflectance imaging in particular improved the visibility over other options, most notably for infero-temporal RNFL defects. Also of note was that red-free was significantly better than standard fundus photography.

Clinical applications: RNFL defects have many causes, but are mostly associated with progressive disorders such as glaucoma. As a result, early detection is critical to prevent vision loss. This study serves as a reminder to all clinicians that they should routinely use red-free filters to enhance the visibility of the RNFL to detect defects, but with preference for multicolour imaging when it is available (in certain optical coherence tomographers and widefield imaging). This is of particular benefit in eyes where the visibility of the RNFL is more difficult such as myopic or tessellated fundi.

Reference: Kim YH, Ahn J, Kim KE. Multicolor Imaging for Detection of Retinal Nerve Fiber Layer Defect in Myopic Eyes With Glaucoma. American Journal of Ophthalmology. 2022 Feb;234:147-155.

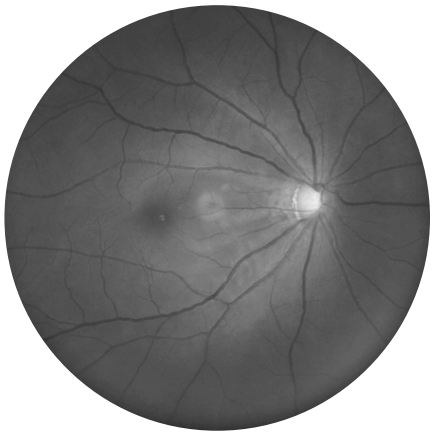
Click here for abstract

Centre for Eye Health case study: 40 year old female with myopia (-7.75/-1.00x85 VA 6/6) referred for investigation of suspected glaucoma in the right eye.

Multicolour imaging was performed using the Spectralis OCT (Spectralis HRA+OCT2; Heidelberg Engineering, Heidelberg, Germany).

A

B

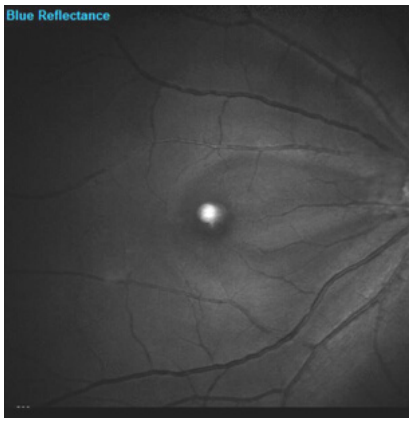


C

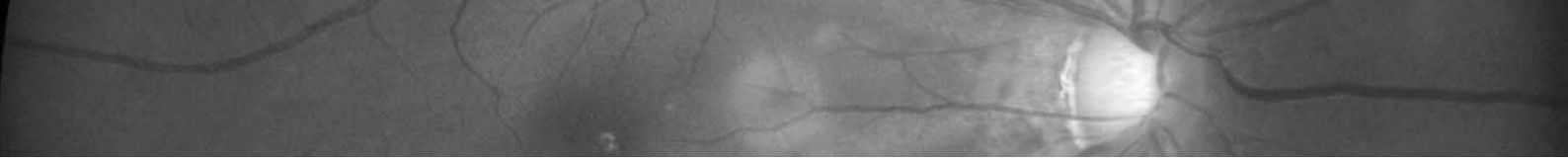
D

E

F



A) Colour fundus photo: RNFL defects are barely visible.
B) Red-free fundus photo: superior and inferior RNFL defects are visible.
C) Multicolour image: clearly shows both superior and inferior RNFL defects.
D) OCT infrared reflectance image.
E) Multicolour green-reflectance, and
F) blue-reflectance images: visibility of the RNFL defects is even more pronounced.



Tape your face masks down to avoid dry eyes

Prepared by Sharon Ho and Elisa Wang

Summary: This study investigated the ocular surface and dry eye symptoms associated with face mask wear. Participants were assessed with Tear Break Up Time (TBUT), Schirmer-1 test, Oxford staining grade, and Ocular Surface Disease Index (OSDI) at all visits. Assessments were done at clinical admission (T1), after 8 hours of facemask wear with no taping (T2) and after 15 days of greater than 8 hours daily face mask wear with the upper open portions of the mask taped down (T3).

Key findings: Signs and symptoms of dry eyes were greater at T2 than at T1 and T3 in terms of TBUT, Schirmer-1 results, OSDI and Oxford staining grade, whereas there was no or minimally significant difference in dry eye signs and symptoms between T1 and T3 for these tests.

Clinical applications: The recent use of face masks has been associated with an increase in anterior eye conditions including conjunctivitis and corneal ulcers and dry eye. This study showed that taping the upper section of the mask significantly improved dry eye signs and symptoms when masks are worn for an extended period of time. Clinicians should enquire about face mask use when signs or symptoms of dry eye are detected, and as part of management, advise patients to tape their face mask to block exhaled air from directly entering the eyes.

Reference: Aksoy M, Simsek M. Evaluation of Ocular Surface and Dry Eye Symptoms in Face Mask Users. Eye & Contact Lens. 2021 Oct 1;47(10):555-558.

Click here for abstract

Glasses with blue-blocking filters may not help young healthy patients

Prepared by Elisa Wang and Sharon Ho

Summary: This study investigated whether prescribing commercially available blue-blocking filters could help alleviate digital eye strain. Twenty-three participants (average age 22.9 years old) with no current visual symptoms performed two 30-minute reading tasks from a computer screen – one task wearing blue-blocking filters and the other task without. The authors recorded the activity of the orbicularis oculi muscle which is often sensitive to eyestrain in demanding visual tasks. Participants also completed a survey before and after the reading tasks to report their visual fatigue and discomfort.

Key findings: There was no change in the orbicularis oculi muscle activity between wearing and not wearing the blue-blocking filters. Reported symptoms of visual fatigue and discomfort, such as vision clarity and how tired the eyes felt were not significantly improved with use of the filters.

Clinical applications: There is currently significant controversy over the value of blue blocking filters with systematic reviews suggesting insufficient evidence. As a result, this study was attempting to use an objective rather than a subjective measure to establish whether the lenses have an effect. While the study showed no difference in wearing blue blocking lenses it has a number of limitations which clinicians should be aware of before considering the value of these results in practice. In particular using asymptomatic subjects as well as only applying the strain for 30 minutes limits the ability to transfer the findings to real world situations.

Reference: Vera J, Redondo B, Ortega-Sanchex A, et al. Blue-blocking Filters Do Not Alleviate Signs and Symptoms of Digital Eye Strain. Clinical and Experimental Optometry. 2022; doi: 10.1080/08164622.2021.2018914. Online ahead of print.

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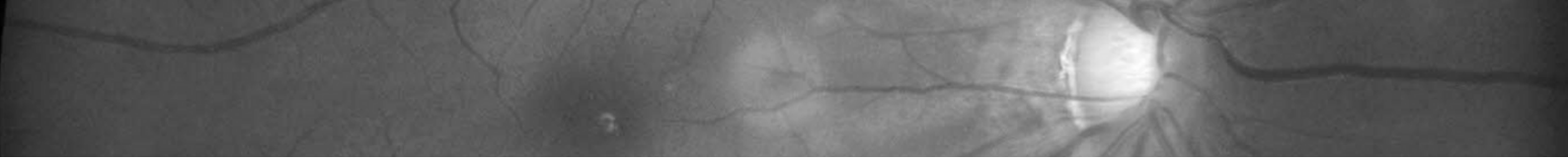

Functional loss occurs in early/intermediate AMD, but standard visual fields are not good enough

Prepared by Sharon Ho and Elisa Wang

Summary: This study reviewed the current evidence for using clinical automated perimetry in routine assessment of early/intermediate age-related macular degeneration (AMD). Specifically, the aim was to determine whether there is evidence of visual field defects in early/intermediate AMD, and if present, whether these defects are linked to real-world patient outcomes.

Key findings: Across the 26 studies identified, there was consistent evidence of worsened global visual field indices (mean deviation, pattern standard deviation, mean sensitivity and frequency of defects) for early/intermediate AMD compared to normal eyes. Standard automated perimetry did reveal visual field defects in early/intermediate AMD eyes that were statistically significant but were not meaningful for clinical practice.

Clinical applications: Patients with early/intermediate AMD have significant functional losses on dark adaptation, mesopic visual fields and other 'non-traditional' clinical tests. At present, these do not have a wide uptake in Australian practice, however visual field machines are ubiquitous. Therefore, if sensitive, visual fields would be a good functional test for detecting loss and change in AMD. Unfortunately this study showed that visual field testing under standard lighting (photopic) conditions is not clinically useful. There is also currently a lack of data regarding other clinical automated perimetry strategies (mesopic and scotopic) and how they can be used to evaluate patient outcomes.

Reference: Trinh M, Kalloniatis M, Nivison-Smith L. Should clinical automated perimetry be considered for routine functional assessment of early/intermediate age-related macular degeneration (AMD)? A systematic review of current literature. Ophthalmic & Physiological Optics 2022;00:1–17.

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A lot of AMD supplements available in Australia are not evidence based!

Prepared by Elisa Wang and Sharon Ho

Summary: There are many supplements available to patients with age-related macular degeneration (AMD) aimed at reducing their risk of progression from intermediate to advanced AMD. However, not all supplements are the same, or follow the Age-Related Eye Disease Studies (AREDS) 2 formula. This study reviewed commercially available supplements in Australasia, the United States, the United Kingdom, and Canada.

Key findings: Sixty-six products were initially identified, but only forty-three products were included for analysis as they contained all of the ingredients from the AREDS 2 formulation. Twenty products contained all the ingredients at 100% or more of the commercially labelled recommended dose, while twenty-three products had some ingredients less than the recommended dose. The cost of those supplements providing the recommended usage dose varied from $0.12 to$6.72 per day (in Australian dollars). Table 1 overleaf summarises the supplements that follow the AREDS 2 formula and are currently available in Australian pharmacies or listed online.

Clinical applications: The vitamin and supplement market in Australia is a $3.1 billion dollar industry with a wide range of products in every category available to consumers. To ensure that they are providing the best possible care to patients, clinicians should be mindful of which AMD supplements they recommend to their patients since not all follow evidence-based recommendations. Clinicians should also inform their patients to be vigilant when purchasing supplements and avoid purchasing other supplements that were not recommended but at the same time be aware of the cost variations and implications.

Reference: Evidence-based Vitamin Supplements for Age-related Macular Degeneration: An Analysis of Available Products. Li Y, Andrew N, LaHood BR. Clinical and Experimental Optometry. 2021; online ahead of print.

Click here for abstract

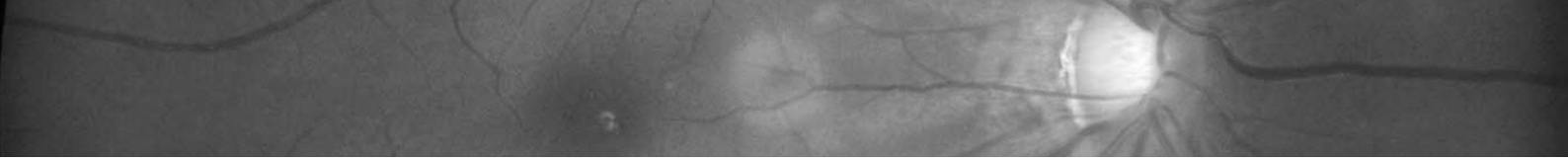

Table 1

Summary of the AMD supplements containing the AREDS 2 formula available in Australian pharmacies or online. Adapted from Li et al. 2021.

	Supplement name	Commercially labelled recommended dose per day	Pharmacy/online
Products containing 100% of the AREDS2 formula	MDeyes	1 cap/4 grams powder	Online
	Stiltec Macutec Essentials	2 caps	Online
	Luxvite Naturals AREDS 2 Macular Health Vitamins	2 caps	Online
	Nature's Eye Vitamins AREDS2 Plus	1 cap	Online
	Visual Advantage AREDS 2 + Multi Vitamin	2 softgels	Online
Products containing >100% of the AREDS2 formula	Quality Health Macula Guard	2 tabs	Pharmacy
	ScienceBased Health MacularProtect AREDS2 vitamin and mineral supplement	2 caps, or 2 scoops mix	Online
	EyePromise AREDS 2	1 tab + 1 softgel	Online
Products containing <100% of the AREDS2 formula	Bioglan Multi + Vision Advanced	1 tab	Pharmacy
	Blackmores Macu-Vision Plus	1 tab	Pharmacy
	Clinicians VisionCare with Lutein	1 cap	Pharmacy
	Herbs of Gold Macu-Guard with Bilberry	2 tabs	Pharmacy
	Sanderson 1-A-Day Vision FX	1 cap	Pharmacy
	Lipotriad Visionary AREDS2 Eye Vitamin	1 softgel	Online
	Provision AREDS2 Macular Support	2 caps	Online
	BioSchartz Eye Health AREDS 2	2 caps	Online
	Bluebonnet Nutrition Eyecare AREDS2	2 caps	Online
	VisiVite AREDS2 Select Eye Vitamin	2 caps	Online