

Contact Lens Update

CLINICAL INSIGHTS BASED IN CURRENT RESEARCH

The International Myopia Institute White Paper Reports – a landmark moment

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It has taken the sum total of 18 months, countless hours, numerous drafts, around 150,000 words, more than 85 contributing authors, seven papers, an editorial and an overview to make up one landmark publication – the International Myopia Institute (IMI) White paper reports, which were published in *Investigative Ophthalmology and Visual Science* on February 28, 2019. In a similar spirit to the Tear Film and Ocular Surface Society Dry Eye Workshop (TFOS DEWS and DEWS II) reports, the IMI reports present peer consensus on a wide scope of topics relating to research of myopia mechanisms, product research and development, clinical and industry best practice and the public health message. The IMI reports create a clear picture of the current landscape of myopia research and practice, with an eye to the future.

It is clear that the IMI Reports have come at exactly the right time. Over the past few years there has been a dramatic increase in clinician awareness, and product innovation by industry, to match research findings of a global increase in the prevalence of myopia, forecast to affect 50% of the world's population by 2050.¹ A global survey undertaken in 2015 revealed that while almost 1000 eye care practitioners (ECPs) from a dozen countries considered themselves highly active in managing myopia, more than half of their progressing pediatric myopes were being prescribed single vision corrections,² which is simply not in line with the evidence base.³

ECPs are increasingly aware of the need to manage progressive childhood myopia beyond simple refractive correction, and are looking to conference lectures, peer discussions and various interpretations of the literature to inform themselves. Professional regulators and guidance bodies are also in need of this comprehensive, consensus guidance – only a week prior to the publication of the IMI Reports, the UK College of Optometrists released 'Guidance for Optometrists [on] Myopia Management' which stated that 'There is evidence that the progression of myopia may be slowed by around 50% across different intervention strategies... [but] there is insufficient evidence that myopia control treatments are effective in reducing the progression of myopia.'⁴ In the USA, the American Optometric Association mentions myopia control in their 2017 'Evidence-Based Clinical Practice Guideline for Comprehensive Pediatric Eye and Vision Examination',⁵ but the lack of FDA approval of any device or treatment for myopia control complicates practical elements of patient communication and prescribing for American ECPs. A confusing professional landscape at the frontline of myopia management creates a barrier to the public health benefits, where applying a treatment strategy with 50% efficacy could have the potential to reduce population levels of high myopia (over 5D) by more than 90%.⁶

On the hot topic of efficacy, the conference highlight in this special issue of *Contact Lens Update* is a research poster presented by Noel Brennan, Xu Cheng and Mark Bullimore at the American Academy of Optometry meeting late last year. Their systematic review provides a fresh and possibly more realistic take on myopia control efficacy; beyond the percentage reduction, what do the studies tell us about the potential cumulative absolute treatment effect? Can we accurately apply a percentage and extrapolate this across an entire childhood to predict

the final outcome of a myopia control intervention? However we end up describing the treatment effect, this poster along with the IMI reports provide a clear indication of the benefits of managing myopia beyond its refractive effects.

In the midst of what is clearly still an evolving landscape of research knowledge and professional guidance, the IMI reports provide valuable, comprehensive, and robust consensus. The IMI special journal issue commences with *Myopia – A 21st Century Public Health Issue*, with lead author Serge Resnikoff of the Brien Holden Vision Institute (BHVI) describing how a landmark World Health Organisation scientific meeting on myopia, held at the BHVI in Sydney, Australia in 2015, led to global recognition of the growing prevalence and consequences of myopia. From this, two committees were formed to produce white papers on interventions for myopia treatment (optical, pharmacological and behavioural / environmental) as well as definitions and classifications of myopia. At a similar time, James Wolffsohn and Nicola Logan of Aston University had approached leading experts to develop consensus guidelines with a focus on informing clinicians, in the style of the TFOS DEWS Reports, in which James had been heavily involved. The groups agreed to merge initiatives in 2016 with the BHVI providing facilitation of the process and Monica Jong as Executive Director. James Wolffsohn and Earl Smith III were established as joint Chairs, and once the seven Committee Chairs were determined, the process began to form the committees. Each met for the first time at the biennial International Myopia Conference in September 2017, with draft reports developed by early 2018 and a rigorous process of peer review and harmonization undertaken throughout 2018. The full process of IMI report development and an overview of each report comprises the second part of the IMI White paper suite, *Myopia Control Reports Overview and Introduction*, written by James Wolffsohn, the committee chairs and the harmonization committee.

Following this, each of the seven IMI Reports – summarised in this special issue of *Contact Lens Update* – present a rigorous synthesis of evidence to inform ongoing research, clinical practice and advocacy.

- *Defining and Classifying Myopia*, chaired by Ian Flitcroft
- *Interventions for Myopia Onset and Progression*, chaired by Christine Wildsoet
- *Industry Guidelines and Ethical Considerations for Myopia Control*, chaired by Lyndon Jones
- *Genetics of Myopia*, chaired by Caroline Klaver
- *Experimental Models of Emmetropization and Myopia*, chaired by David Troilo and Earl Smith III
- *Clinical Myopia Control Trials and Instrumentation*, chaired by James Wolffsohn
- *Clinical Management Guidelines*, chaired by Kate Gifford.

If you are an ECP, researcher, or come from the commercial angle of our industry, which should you read? Well, whilst I suggest all of them, here are my recommendations for the essential 'IMI Playlist' for each of these groups of interested parties within the profession. Start, in each case, with the *Myopia Control Reports Overview and Introduction*, which details the background of risk factors for myopia onset and progression, along with providing an overview of each report to best direct your learning.

If you're an ECP, then review:

- *Defining and Classifying Myopia*. Get clear on the definitions of pre-myopia, myopia, high myopia, and myopia complications with key references.
- *Interventions for Myopia Onset and Progression*. Understand the research behind optical, pharmacological, environmental (behavioural) and surgical interventions for myopia.
- *Clinical Management Guidelines*. Appreciate the scope of risk identification, parent and patient communication, informed consent, basic examination procedures, follow up schedules, when to change

and stop treatment, future treatments and additional resources for clinical practice.

- *Industry Guidelines and Ethical Considerations for Myopia Control*. Consider factors in the ethical development, registration, marketing, on- and off-label prescribing and patient use of myopia control treatments, including risk versus benefit and quality of life considerations.

The following may be of particular relevance to researchers:

- *Experimental Models of Emmetropization and Myopia*. This is a comprehensive synthesis of the research into numerous animal models of refractive development, describing the anatomic and physiological nuances in translating these results to humans. This is a fascinating read for the ECP and a foundational paper for the basic science researcher.
- *Myopia Genetics*. An extensive summary of over 200 genetic loci which have been reported for refractive error, describing 'insights into the molecular machinery underlying eye growth.'
- *Clinical Myopia Control Trials and Instrumentation*. A robust set of guidelines for constructing studies and clinical trials aiming to investigate myopia control efficacy; including duration, outcome measures, assessment of rebound, inclusion and exclusion criteria, control group selection and safety considerations.

If you work in the commercial eye care industry, developing new products and systems for ECPs to employ on the frontline of myopia care, then I suggest the following are important to read and digest:

- *Industry Guidelines and Ethical Considerations for Myopia Control*.
- *Clinical Myopia Control Trials and Instrumentation*.
- *Interventions for Myopia Onset and Progression*.
- *Clinical Management Guidelines*.

Of course, it may just be simpler for you to read them all, and if time is short, then the summaries can be found here in this edition of Contact Lens Update.

The publication of the IMI White paper reports is a landmark moment for the eye care profession and industry. By providing a full-scope, critically evaluated and robustly synthesized expedition through the world of myopia research and practice; these reports clearly draw a line in the sand for future coordinated efforts for the ultimate benefit of our young myopic patients.

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