Different Perspectives of Myopia Management
CE02

Ashley Wallace Tucker, OD, FSLS, FAAO | Eef van der Worp, BOptom, PhD FAAO FIACLE FBCLA FSLS

Course description

- This session will explore the different perspectives of two different health professionals on myopia and myopia management – also from an international standpoint – and will discuss ways to bridge the gap between the perspectives.

Course Objectives

- To understand differences in approach and perspective from around the globe
- Discuss whether Optometrists and other health care professionals – including Pediatricians, Ophthalmologists and school nurses - are aligned in their approach to myopia management
- Offer ideas on how to leverage these relationships to improve patient access to proper care

Course outline

This session is divided into two main sections:

1. DIFFERENT APPROACHES AND STANDPOINTS FROM AROUND THE WORLD
2. PEDIATRICIANS & OTHER HEALTH CARE PROVIDERS PERSPECTIVE

DIFFERENT PERSPECTIVES: THE INTERNATIONAL STANDPOINT

The ABC of International Myopia Practice: from Atropine to Zernike aberrations

Myopia management is a confusing topic. On the one hand, we have been hearing about the benefits of the various intervention methods for myopia for years. Various institutes are actively promoting myopia management strategies and courses and have created websites that can guide eye care practitioners to predict myopia progression and to estimate its potential to be slowed with various treatment options. Also – special myopia clinics have been created with specifc mission statements to the topic, such as 'We treat kids with myopia (nearsightedness). We don't sell glasses'. On the other hand, published papers in the peer-reviewed scientific ophthalmology journals have titles like: 'Commonly Held Beliefs About Myopia That Lack a Robust Evidence Base.' The title seems self-explanatory. According to the paper, a number of statements are considered to lack sufficient supporting data to be considered as evidence-based for myopia management.

In this part of the session, different approaches to myopia management – from pharmaceutical intervention (**A**tropine) to higher order aberration optical considerations (**Z**ernike polynomials) will be discussed, with

insights from around the globe. There is not one generic preferred first option on an individual basis, but rather 'whatever works' for the child.

Perspective #1 what do (all these) numbers mean?

What we have learned from myopia management (MM) studies so far, is that we can reduce myopia progression in children. The degree to which that is possible, is subject to discussion. The high numbers we frequently see like '50% reduction' can be true, but there are two caveats: 1) this is an average number and ECPs should be cautious using this towards patients and parents, and treat each case differently and; 2) this effect can only be achieved within a relatively small window of childhood – let's say the bulk part would lay within ages 8 and 12. So it is important that the treatment option(s) chosen are used to their full potential within that relative short timeframe, to get as much myopia reduction as possible. While this may not be 50% of their overall prescription, it has been well established that every diopter counts in myopia pathology prevention later in life. Axial length changes are the preferres/desired way to express and monitor myopia progression in children.

INTERVENTIONS

In essence, there are three main intervention methods: lifestyle intervention, pharmaceutical intervention, and optic intervention. The latter can be subdivided into glasses, multifocal soft contact lenses for myopia and orthokeratology. In this session, these items will be highlighted and discussed.

Intervention #1: LYFESTYLE INTERVENTION/OUTDOOR LIGHT

- Spending more time outdoor seems to be a 'no-brainer' and by far the most cost-effective option of all intervention methods. Spending less time indoor, and ideally less on digital devices that have small 'working distances' seems very effective in preventing myopia development. The current COVID full or partial lockdowns may have a negative effect on this.

- From Harman 1916, cited in IMI white papers: "A robust child, well fed, enjoying a maximum of outdoor life, is less likely to get tired eyes and subsequent stretching of the coats of the eyeball and myopia than is a child that is cooped up indoors all day, sitting over lessons, andnever joining in vigorous outdoor games"

Perspective #2: how much outdoor time, and why?

– MECHANISMS OF PROTECTIVE EFFECTS OF OUTDOOR TIME

- Not so much exercise, but rather lighting conditions define protective effects of outdoor.
- Is dopamine production the proposed mechanism behind this effect?

– 20-20-2 RULE

- 20 minutes reading, 20 seconds distance gaze, 2 hours outdoor

– SCHOOL EDUCATION PROJECTS

- Is it time to educate kids at schools (and parents) in a preventive way to stop the myopia pandemic?

- HOW MUCH TIME OUTDOOR IS ENOUGH?
  - Time spent on computers and other devices.
  - Distance of reading

- Tablets vs book: how they differ
- Red Light Therapy – experimental (not an accepted method yet)

Intervention #2: ATROPINE

From ophthalmologists' point of view, atropine may be one of the preferred intervention options. There are however side effects, depending on the dosage atropine used. Currently 0,01%, 0,1%, 0,2% 0,50% and 1% are all used currently in ophthalmic practices. Sometimes in conjunction with other intervention methods. What are the best dosages, and how is this best defined?

- LOW vs HIGH DOSE ATROPINE
- PROTOCOLS FOR ATROPINE
- SIDE EFFECTS
    - Headaches, asthenopia, photophobia, allergic reactions
    - No additional optical needs that are required with low dose atropine (0.01%)
- COMBINATION THERAPY (of atropine with soft lenses, OK or glasses)
- ADDITIONAL OPTICAL NEEDS
    - Multifocal glasses
    - Photochromatic glasses
    - Sunglasses

Perspective #3: atropine first? Or optical intervention first?

Intervention #3: OPTICAL INTERVENTION

#3A: ORTHOKERATOLOGY

Orthokeratology has a long track record regarding myopia management. It may be the intervention method that also brings up most questions re safety. Most of these issues center around safety of lens wear (in young children). How can we make orthokeratology as safe as possible? Other questions are how to improve the efficiency of the device, and the use (or not) of using corneal topography to fit orthokeratology. Anatomic variables of the eye that play a role in the effectiveness will be discussed.

- EFFICIANCY
    - Absolute versus relative effect, use of percentage (or not)
- OPTICAL ZONE DIAMETER / ECCENTRICITY/LENS DESIGN
    - All affect OK outcome
    - Low vs high myopes
    - Regular vs customized designs

- PUPIL DIAMETER
    - Both related: papers on lens decentration and better efficacy.
- ASTIGMATISM CORRECTION
    - Effect of astigmatism correction
- SAFETY IN CHILDREN
    - MK, Hygiene and compliance (ophthalmology standpoint)

#3B: SOFT LENS OPTICAL

INTERVENTION

Soft lens intervention is relatively new in myopia management, but with increasing good track record numbers. Different systems are available, from concentric center-near (Torus) and center-distance designs to EDOF designs. The modality comes not only in 2-week and 4-week replacement systems, but also as daily disposables. What does this do in terms of safety of lens wear? How can this be further optimized going forward, using higher order aberration changes and individual differences into account?

- DIFFERENT OPTICS
- HIGHER ORDER ABERRATIONS
- AGE OF TREATMENT/SAFETY
- DD vs REUSABLES
- ASTIGMATISM
- SAFETY

Perspective #4: Is lens wear safe (ortho-k and soft lenses), and is there a preference?

PEDIATRICIANS & OTHER HEALTH CARE PROVIDERS PERSPECTIVE

Overview

- In 2019, the American Academy of Ophthalmology (AAO) created the Task Force on Myopia in recognition of the substantial global increases in myopia prevalence and its associated complications.
- Task Force was comprised of recognized experts in myopia prevention and treatment, public health experts from around the world, and organization representatives from the American Academy of Family Physicians, American Academy of Optometry, and American Academy of Pediatrics.

U.S. Optometrist Perspective

- 2022 American Optometric Survey highlights

- 69% of doctors of optometry report providing myopia management services in their practices
- 73% believe an annual progression of 0.5 to 0.75 diopters is warranted before initiating myopia management protocols.
- Refractive error was rated the most important risk factor considered to warrant myopia management followed by rate of progression/rate of change and patient age.
- Food and Drug Administration-approved soft (contact) lenses for myopia management was the preferred myopia management method.
- 33% of myopia management candidates defer treatment; 80% of these patients defer treatment because of costs.

Pediatrician Perspective

- Typically provide first vision screening
  - Simple visual acuity test
  - Some own handheld auto-refractors
- Great opportunity for Pediatricians to educate parents
  - The American Optometric Association recommends an eye exam for asymptomatic and low-risk children between the ages of 6 and 12 months, once between the ages of 3 and 5 years, before the first grade and annually thereafter.
  - Children with any level of myopia face significant risks in the future, including the potential to live with visual impairment for decades.
- In a position to provide referral to local OD
  - Be sure to introduce yourself to all Pediatricians within a reasonable distance
  - Shared interest for overall health (including eye health) for your mutual patients
  - Provide business cards and educational materials
  - A recommendation from the Pediatrician to an Optometrist is very impactful!!
  - Consider sending a follow-up letter back to the Pediatrician after each annual visit
- American Academy of Pediatrics screen time recommendations
  - Under 18 months: Avoid screen time other than video-chatting.
  - Age 18–24 months: Find high-quality programming (if you choose to introduce screen time), and watch or play together.

    - Age 2–5: Limit screen use to one hour per day of high-quality programs.
- Ophthalmologist Perspective
    - Can be a trickier relationship
        - Trust is KEY!
    - Co-management opportunities
        - Ocular biometry
    - Most don't see kids but they do see parents!
        - Can be an excellent source of information for myopia management especially for LASIK patients with children
        - Win-Win
            - Won't be any less LASIK patients – just easier lower myopes to operate on!
    - Small amount of Pediatric Ophthalmologists
        - About 1000 nationwide
        - Progress is being made in the acceptance of the need for myopia management
            - The World Society of Pediatric Ophthalmology & Strabismus (WSPOS) has issued its Myopia Consensus Statement 2023, concluding there is "sufficient evidence to warrant the adoption of myopia prevention and control measures in clinical practice in children with progressive myopia of childhood.
            - *Eye & Contact Lens*, the ophthalmological peer review journal of the Eye and Contact Lens Association, has published a paper affirming the corneal health of children who wear soft contact lenses in comparison to adult wearers.
        - Traditionally, prescribe atropine only if anything
        - Many caution patients against orthokeratology
            - Consider providing literature dispelling the myth that it is unsafe?
            - Quote from aao.org
                - "There is a risk of infection with Ortho-K lenses. They are also more difficult to fit compared to regular contacts lenses, and more follow-up visits to the doctor are needed."
- School Nurses

- Least informed of all health care providers but easiest relationship to forge
    - Offer to help with vision screenings
    - Provide seamless referral source for failed screenings
    - Offer to speak at PTO meetings, health fairs, etc

Q&A – DISCUSSION – CLOSING REMARKS