Children’s vision – the big issue!
(Fiddling today, knowing that Rome will burn tomorrow)

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DISCLOSURE

I have received funding from the following bodies for lectures, key opinion leader/product feedback, and research:
- American Academy of Optometry (UK), Association of Optometrists, Birmingham Focus on Blindness, Black & Lean, British College of Dispensing Opticians, British College of Optometrists, Crewe Hospital, ESRB, ESO, General Optical Council, Hadassah College, Imperial College London, Loughborough University, Manchester, National Association of Refractive Surgery, Opticians, Optic, Optometric Principles Trust, Optometry, Optos, Paul Hamlyn Trust, Predicure, Schwartz, Specavers, Thomas Pocklington Trust.

The big issue

- What is the commonest cause of visual impairment?
- Myopia is the most common vision disorder and the leading cause of visual impairment worldwide (Tkatchenko et al., 2015)
- Pie chart figures approximate, based on data on WHO website

Why does myopia matter?

- Significant health impact of myopia
  - High myopia (≥-6) increases risk of retinal detachment, myopic macular degeneration, glaucoma, & other conditions
  - “no evidence of a safe threshold level of myopia for any of the known ocular diseases linked to myopia” Flitcroft, 2012
  - In the Copenhagen study myopia-related diseases are already the most common cause of impaired vision Holden et al., 2014

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It’s like an epidemic!

- 93% of Taiwanese medical students are myopic (Lin et al., 1996)
- Prevalence of myopia in UK has more than doubled in last 50y (McCullough et al., 2016)
- 50-55% of UK university students are myopic (Logan et al., 2005)

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**Some myths about vision screening**

- Only amblyopia matters
- Vision is stable throughout childhood
  - Health For All Children (HFAC 5) still stops at age 5y
- “Children with bilaterally poor vision will largely present” (HFAC 5; c.f., Thomson, 2002)

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**Behavioural interventions**

- Risk of myopia onset slightly reduced by
  - More time outdoors (1h pw → 2%; Wildsoet et al., 2019)
  - Less near vision
- Balanced life = balanced vision

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**Active interventions for myopia control**

- Centre distance multifocal contact lenses & orthokeratology slow myopia progression by ~40% Wildsoet et al., 2019
- 1 Asian study indicates MyoSmart spectacle lenses slow myopia progression by ~50% Lam et al., 2019
- No evidence that low dose atropine reduces axial elongation Brennan & Cheng, 2019

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**Myopia: the new view**

- Patient about to become myopic
  - Image shell focused on retina at fovea
  - Image focused behind retina in periphery
  - Relative peripheral hyperopic defocus = RPHD

- The eye grows so the peripheral image is in focus causing myopia at the fovea

- Spectacles or contact lenses correct the focus at the fovea, but not the RPHD so myopia progresses

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**Why bother?**

- Reducing the rate of myopia progression by 50% would lead to a reduction in the frequency of high myopia of over 90% (Brennan, 2012)
- For person destined to be -6.00 (Flitcroft, 2012)
  - No control: -6.00; RD risk 16x MMD risk 40
  - 50% control: -3.25; RD risk 10x MMD risk 10

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**Conclusions**

- It is premature to recommend myopia control as a public health intervention
- BUT:
  - Myopia is a public health issue (Flitcroft, 2014)
- In the short-term:
  - Is myopia going undetected?
  - Is there a health inequality?
- In the long-term:
  - Myopia control interventions for the masses?