

A SALUTE TO A.M. SKEFFINGTON--  
PIONEERING INTEGRATIVE-BEHAVIORAL,  
OPTOMETRIC EPIDEMIOLOGIST,  
DIALECTICIAN –PHILOSOPHER, TEACHER AND  
LEADER

What's New in Nutritional Optometry &  
Optometric Epidemiology!  
2018 UPDATE FROM THE NUTRITIONAL  
OPTOMETRY INSTITUTE

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# Relevance of 1974 Thesis Conclusions to 2017 Optic Disc Changes in 4-yr Olds

- Ben Lane OD's SUNY Master's Thesis, "Elevation of IOP with Daily Sustained Reading & Closework Stimulus to Accommodation" publ 1980 , Info Quest, Ann Arbor, MI.
- Addicted 4hr-detailed attention to hand-held digital devices results in fatigue of accommodation in 4 yr-olds.
- Fatigue syndrome instigates episodic IOP elevation.

# Protocol for Episodic IOP Elevation in 4,5, & 6 yr-olds

- Accommodative Fatigue syndrome instigates episodic IOP elevation, as if to stretch the eye to reduce the need for so much accommodation
- 4-yr old eye is already large compared to skull size.
- If eyeball cannot stretch to become myopic, episodic IOP elevation initiates saucering and then profound deepening and cupping with progressively steepening sides and widening within the relatively soft optic disc in 4 yr-olds & 5 & 6 yr olds. (Lane, KISS, 2017).

# Nutriture Component in Eye-Focusing Fatigue Prevention

- Data collected by Nutritional Optometry Institute has indicated the value of the following in increasing Positive Relative Accommodation amplitude (PRA):
  - a. Folate (Folic Acid vitamin B9)
  - b. Chromium as the major insulin receptor potentiator enabling uptake of glucose fuel into muscles.

# Factors Affecting PRA

- 1. Diet
- 2. Exercise of Accommodation, e.g., Accommodative Rock or real life, profound exercise in focusing while maintaining binocularity.
- 3. Prevention of sustained stress that encourages abandonment of binocularity.

Skeff: “Why would anyone want to wear a lens when they can see perfectly clearly without it?”

- 1. A +1.00 DS or a +1.25 DS lens in glasses for use only as a reading add for otherwise normal 4 year-olds both helps prevent myopiagenesis and optic disc cupping while encouraging learning skills.
- 2. Coordination and productivity are measurably enhanced by implementing Skeff & Associate’s protocols for lens prescribing.
- Protection against environmental, occupational hazards.

# Is teleology a science or metaphysics?

- Teleology: It appears that the organism can be understood as
- trying diligently to adjust our physiology to help us achieve our immediate intentions with most economic mobilization of available resources
- within range of available resources.
- Examples: Control and value of blood pressure regulation. When is inflammation valuable?

# Insights: Anterior vs Posterior-induced Glaucoma

- Posterior-Induced GLAUCOMA: When is HRA\* - ocular hypertension-induced cupping dangerous?
- Clues from Spectral Analysis feature of Retinal Photography and also stereo photography;
- Quantified clues from Threshold Analyses of Central 24-30 degrees Visual Field
- Posterior Optical Coherence Tomography (OCT-P) TO DEPICT SHAPE OF CUPPING & QUANTIFICATION. // \*HRA = Habitual Relative Add

# Insights: Anterior vs Posterior-induced Glaucoma Affected by Lenses & Diet

- Anterior-Induced Glaucoma: Many factors mediate Anterior & Posterior forms. Diet influences each form profoundly.
- Anterior: REMODELING is a key! Too much denatured protein missing intrinsic Vitamin B6 due to cooking & other processing results in defective protein metabolism and defective remodeling.
- In young athletes boosting denatured protein intake affects the iris pigment remodeling, resulting in increased risk for pigmentary dispersion glaucoma.

# Insights: REMODELING

- Perfect remodeling of Bruch's Membrane and iris pigment cells require specialized proteins synthesized from amino acids not in the diet.
- Vitamin B6 potentiates the transaminase enzymes to convert so-called "essential" amino acids in the diet to the specific amino acids to make the exact proteins required for "original-equipment" remodeling especially in the lining of the *Ileum* of the upper small intestine.

# Epidemiology Indicated Eye Supplements

- 1984—Ben Lane published the need for both copper and zinc for AMD prevention/reversal because of their importance in synthesizing SuperOxide Dismutase (SOD).
- Lane spoke with Walter Willett of Harvard and David Newsome of New Orleans that both Cu and Zn needed to be in the formula to be tested by the NEI (resulting in the original AREDS formula).
- Newsome's group did an *in vitro* study to prove that the copper was important & the NEI agreed.

# Dr Lane's Supplement Recommendations

- 2006—Dr Lane presented evidence for importance of Vit B6 (Pyridoxine) for remodeling Bruch's Membrane (ARVO Summer Conference on Macular Degeneration)
- Dr Lane did not patent his published formulations.
- The following formulas emulate Dr Lane's recommendations:
  - **Macular Health Formula** by Eye Science Lab
  - **Eye and Body** by BioSyntRx Lab

# Insights: Strategies to achieve perfect air-puff non-contact tonometry measurements

Strategies: Best to keep eyes wide open until at least one second after air puff.

- 1. Deep Breathing through the nose only
- 2. Self Hypnosis – Pretend you are an actor on a stage playing dead with eyes wide open!
- 3. Patient holds only the FELLOW EYE open!

# Update on our Photophobia Studies

- Lane – 39 published studies on FUNCTIONAL PHOTOPHOBIA, several presented at ESOC & KISS.
- Functional Photophobia is caused by a binocular fusion problem. Closing one eye stops the photophobia. The severity of the photophobia increases with Skeff and Associates 6 stages of deterioration in the Accommodative Fatigue Syndrome.
- Intractable Central Photophobia due to preretinal membranes, now easily seen in retinal photos & OCT.

# Documenting Preretinal Membranes

- Retinal Cameras with Spectral filter analysis:
  - Increase illumination to approx “5” in Visucam2 while using a red filter, augmented with observation through a green filter.

Posterior Optical Coherence Tomography (OCT)

# PRMs—Defect or Virtue of the System?

- Dr Lane's research in the Ophthalmology Dept at Columbia University documented the epidemiology of the hypervisibility of these membranes.
- Surgeons see them as a consequence of surgery.
- But they are extremely common in persons exposed to too much sun and lacking protective enzymes.

# Preretinal Membranes & Central Photophobia

- Preretinal Membranes
  - Epiretinal Membrane (within vitreum) (ERM)
  - Posterior Vitreous Detachment (lining of vitreum)
  - Internal (or Inner) Limiting Membrane (ILM) thickening
  - Macular Pucker and Cellophane Maculopathy
  - ICD codes: H35.23 for other non-diabetic proliferative retinopathy and H35.373 for binocular mac pucker

# Possible Virtue of early PRMs

- PreRetinal Membranes in early stages:
- 1. Light up when sun or light beam is directed into our eyes, warning us to get out of the line of the vision disrupting light.
- 2. Slightly protect the retina from extreme photic damage if we heed the warning by adding an extra thickness to the layers that are preretinal.
- 3. There is evidence that additional SOD may be synthesized in the PRMs as in the posterior vitreous hyaloid membrane.

# Summary

- Thanks to the influence of Skeffington and his Disciples we have been encouraged to investigate deeper as to causes of conditions we measure.
- Thanks to Skeff and many other scientists we are able to see how our bodies try desperately to try to help us achieve our immediate goals.
- Skeff questioned is it right to think of myopia as a refractive error – or is it the organism trying to remedy a problem?

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