2160th Conference



3rd International Conference and Expo on Optometry & Vision Science October 08-09, 2018 | Edinburgh, Scotland

Special Session Day 1

Optometry 2018

Optometry & Vision Science

October 08-09, 2018 | Edinburgh, Scotland



Mark Wright

Royal College of Surgeons, Scotland

Quiz on diagnostics eye algorithms

There are many excellent ophthalmology textbooks which give the novice the appropriate knowledge, however very few indicate how to apply it. For this reason I have developed along with colleagues a series of diagnostic algorithms (Edinburgh Diagnostic Algorithms) for the three most commonly encountered scenarios: red eye (s), visual loss and diplopia. I've included two others; anisocoria and epiphora. These diagnostic algorithms allow the inexperienced clinician (in ophthalmological terms) to start toutilise and build upon their existing knowledge by consulting a framework which represents the thought processes of their more experienced colleagues. Algorithms are, therefore, simply a user-friendly version of these diagnostic and/or treatment thought processes. Algorithms are always a compromise between having enough detail to cover the most commonly encountered diagnoses while remaining simple enough to use. They rely upon the clinician being able to clarify the history and elicit the clinical signs which act as signposts on the road to diagnostic nirvana.

I'll present the results of 3 published studies looking at the accuracy of the Edinburgh Diagnostic Algorithms I'm hopeful that during the course of my talk I'll convince you of their benefits whilst having a bit of fun!

The accuracy of the Edinburgh Red Eye diagnostic algorithm. H Timlin, L Butler & M Wright Eye (Lond). 2015 May;29(5):619-24.

The accuracy of the Edinburgh Visual Loss diagnostic algorithm. C Goudie, A Khan, C Lowe and M Wright. Eye (Lond). 2015 Nov;29(11):1483-8.

The accuracy of the Edinburgh Diplopia diagnostic algorithm. L Butler, T Yap and M Wright Eye (Lond). 2016 Jun;30(6):812-6

Narrated algorithm talk: https://youtu.be/9MykiR5imtw

Biography

Mark Wright perform over 300 small incision phaco-emulsification (modern small incision) cataract surgeries annually with over 99% as a day case. His cataract outcomes are as follows; over the past three years (1,173 consecutive cases), 96% of patients saw 6/12 or better postoperatively (comparative figure is 91% from the national cataract audit). Mark's capsular rupture rate, the most commonly sited measurement of surgical dexterity was 0.6% (1.9% national cataract audit). He co-leads the oculoplastic (eyelid and socket) service for Lothian. Audit of surgical outcomes forms the backbone of revalidation, He was the inaugural audit secretary for the British Oculoplastic Surgical Society. He have a keen interest in teaching and has, for the past 10 years, run the undergraduate ophthalmology course at Edinburgh University. Consultant Ophthalmologist, Lothian University Hospitals NHS Trust, Princess Alexandra Eye Pavilion, Edinburgh Consultant Ophthalmologist, West Lothian NHS Trust, St John's Hospital, Livingston. Honorary Part-time Senior Lecturer, Edinburgh University.

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Julia Pulliam

St. Louis Healthcare System, USA

Angelina F. Bonner

VA Illiana Health Care System, USA



Challenges beyond the phoropter: Part I neuro-eye symposium

The eye exam does not stop there." Eye care practitioners have the privilege and ability to diagnose a variety of neurologic conditions based on ocular findings. By the utilization of imaging and laboratory tests, we can extend our reach beyond the phoropter to aid in the diagnosis and management of our patients' ocular and systemic health. We have the duty and ability to initiate and coordinate appropriate care in a timely manner for our patients. By actively participating and interacting with other specialists, we establish our vital role in the health care system. We will present a variety of clinical cases that demonstrate the importance of utilizing serological testing and imaging to establish a proper diagnosis and treatment plan.

Biography

Julia Pulliam attended Indiana University College of Optometry and graduated with Doctor of Optometry degree. Dr. Julia is staff Optometrists at the St. Louis VA Medical Centre. Julia is an active member of the Armed Forces Optometric Society (AFOS), the American Optometric Society (AOA), the American Academy of Optometry (AAO), and the St. Louis Optometric Society (SLOS). At St. Louis VA, she served as both Optometry Residency and Externship Coordinator in addition to Contact Lens Coordinator. Currently, she is serving as the Acting Chief of Optometry.

Angelina Bonner earned her Bachelor of Science from Bradley University and her Doctor of Optometry degree from Indiana University. As a doctoral candidate, Dr. Bonner performed contact lens research and presented on developing a method to assess on eye contact lens wettability at the 2009 Academy of Optometry meeting. During her residency at the St. Louis Veterans Affairs Medical Center(VAMC), she specialized in ocular disease, specialty contact lenses, and primary care. Dr. Bonner has presented on several complex ocular disease cases both locally and nationally during her career. Following residency, Dr. Bonner's passion for serving veterans led her to the Dallas VAMC where she managed complex ocular disease, traumatic brain injury cases, and specialty contact lens care. Dr. Bonner currently enjoys working as the Director of Specialty Contact Lenses, staff optometrist, and attending at the VA Iliana Healthcare System in Danville, IL. In addition to educating students and residents with didactic activities and clinical training, Dr. Bonner holds adjunct faculty positions at several universities. In fall 2017, she earned the distinguished title of Fellow of the American Academy of Optometry. Dr. Bonner is currently licensed in Texas, Illinois, and Missouri.

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Scientific Tracks & Abstracts Day 1

Optometry 2018

··· Day-1

SESSIONS

Neuro Optometry | Glaucoma | Ocular Diseases | Lenses | Retina

Chair: Carolyn Carman, University of Houston, USA

SESSION INTRODUCTION

- Title: Observations in a population with diffuse traumatic brain injury Clifford D Brown, Central Alabama Veterans Healthcare System, USA
- Title: Useful clinical pearls for assessing and managing visual impairment in brain injury patients Carolyn Carman, University of Houston, USA
- Title: Molecular basis of congenital glaucoma Chikezie Grand Ihesiulor, University of Manchester, UK Udo A Ubani, Abia State University Uturu, Nigeria
- Title: Prevalence estimates for myopia in children and young people in 2013–2017 Silvia Gamboa Saavedra, Centro de Oftalmología Bonafonte, Spain
- Title: Is there still a place for the primary care optometrist? Pamela J. Miller, Southern California College of Optometry, USA
- Title: Prevalence and risk factors for myopia and hyperopia in an adult population in southern India Sanil Joseph, Aravind Eye Care System, India
- Title:Comparison of the Snellen acuity chart with the spectrum eye care software LogMAR chart
amongst children of school going age
Thokozile Ingrid Metsing, University of Johannesburg, South Africa





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Observations in a population with diffuse traumatic brain injury

Clifford D Brown

Central Alabama Veterans Healthcare System, USA

uch has been said in the past decade concerning traumatic brain injured patients. Although each injury is particularly unique, certain general observations can be made of neurologically-driven behaviors that seem to be both reasonably common and associated with this type of sudden, forced movement of the cranial bony structures and the resulting actions within the cerebral soft tissues. The visual pathways and the globe itself are in a unique position to reveal certain aspects of the neural damage. Visual field studies, oculocoherence tomography, and dilated fundus examination can be used to demonstrate vitreous detachments, scotomas, and retinopathy, while other routine testing demonstrates paresis of accommodation, convergence insufficiency, irregular eye movements, and numerous other degradation of binocular function. As an active contributor to the general health care team, the eye care specialist should be aware of at least the most common signs, both focal and global and the associated symptoms. Recent studies have been published that support the contentions of those providers who work routinely with this particular population. While much research remains to be done, the authors of this paper have proposals that seem to at least partially suggest possible physical explanations for several of the most commonly encountered challenges experienced in a significant group of athletes, accident victims and soldiers. This presentation has been developed based upon clinical experience of the traumatic brain injury (TBI) team in a Veterans Health Administration hospital, a team of providers that assesses, diagnoses and provides rehabilitation on an outpatient level to patients who have sustained a wide variety of brain injuries. Principally developed by those who provide this service on a daily basis, the observations are those of rehabilitative neurological professionals and will provide comment on the mechanism of injury, some diffuse effects on the structure and function and an attempt to incorporate approaches and applications of techniques used today in restoration of neuromuscular function in those with traumatic cerebrospinal injury.

Biography

Clifford D Brown serves in the Central Alabama Veterans Health Care System as Chief of the Eye Clinics. He was Senior Health Adviser and Senior Analyst/Operations Chief of National Biosurveillance Integration Center and the U. S. Army Deputy Chief of Eye Services and Behavioral Vision Chief for the Exceptional Family Member Department and served as a rehabilitative consultant for five school districts in USA.

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Useful clinical pearls for assessing and managing visual impairment in brain injury patients

Carolyn Carman University of Houston, USA

Background/Aim: Vision impairments are often associated with brain injuries and may be combined with other multiple impairments, but evaluating these patients in order to identify the presence of vision-related problems can be challenging. Sometimes the deficits are difficult to identify because they are subtle; sometimes they are difficult to assess because the patient may be non-verbal or unable to respond to conventional testing methods.

Content: This presentation will address clinical pearls and useful approaches for evaluating and managing children or adults who have suffered vision loss or impairment due to brain injury and may have other impairments complicating the examination process as well.

Implications: The goal of this presentation is to share the development of useful approaches and techniques gained from over 30 years of experience in the clinical and rehabilitative care of brain injury patients of all ages in both hospital-based and private-practice settings.

Biography

Carolyn Carman is a Clinical Professor and Director of the Center for Sight Enhancement at the University of Houston College of Optometry in Houston, Texas. She is a graduate of the University of South Florida and of the Southern College of Optometry where she earned her Doctor of Optometry degree. She completed a residency in ocular pathology and low vision rehabilitation at the VA Medical Center in Kansas City, Missouri. Dr. Carman is a Board Certified Diplomate of the American Board of Optometry and a Fellow of the American Academy of Optometry. She is a member of the American Optometric Association where she has participated on or chaired several national committees including the Neuro-Optometric Rehabilitation Committee and Ethics and Values Committee. She was twice appointed by the Texas Governor to the Texas Optometry Board and served as Chair. Dr. Carman has also been a member of an independent review board reviewing pharmaceutical research studies and as an investigator in clinical studies. She has lectured extensively, nationally and internationally, on low vision rehabilitation and brain injury and formerly produced a syndicated radio program geared toward persons with low vision and reading disabilities.

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Molecular basis of congenital glaucoma

Chikezie Grand Ihesiulor¹ and Udo A Ubani² ¹The University of Manchester, UK ²Abia State University, Nigeria

Purpose: The purpose of this study was to detect pathogenic mutations in cytochrome P450, family 1, subfamily B, polypeptide 1 (*CYP1B1*) gene in 19 sporadic primary congenital glaucoma (PCG) cases and to identify patients lacking *CYP1B1* mutations. Secondly, to conduct an *in silico* analysis of exome sequencing data of variants common to three related pigment dispersion syndrome (PDS) patients.

Methods: *CYP1B1* exon 2 and the coding part of exon 3 of 15 participants were amplified by polymerase chain reaction and amplicons were sequenced by Sanger sequencing. Sequencing data was analyzed to identify the gene mutations or SNPs. Second, the exome sequencing data of the PDS patients combined was analyzed in-house by bioinformaticians and further filtered manually to identify candidate genes for PDS.

Results: Four previously reported PCG-associated *CYP1B1* mutations (c.1159G>A; p.E387K, c.230T>C; p.L77P, c.1103G>A; p.R368H and c.1568G>A; p.R523K) were found in four patients out of the 15 fully 'sequenced' patients. Also, 10 previously reported single nucleotide polymorphisms and two novel noncoding variants were identified. Second, 21 candidate genes were found after filtering using various databases (OMIM & GeneDistiller). Nine genes (*TPCN2, TYR, PAX6, DICER 1, FOXE3, TGIF1, TCF4, RPGR and CNGB3*) may be of more importance since they are associated with ocular diseases.

Conclusion: The relatively low percentage of PCG patients having CYP1B1 mutations (4/15=26.6%) demonstrates that other known and unknown genes may contribute to PCG pathogenesis. Lack of CYP1B1 gene mutations in some patients stresses the need to identify other responsible candidates. More analysis may be needed and the genes identified may be screened in future in other PDS patients to study PDS genetics.

Biography

Chikezie Grand Ihesiulor was born in Port Harcourt, Nigeria, in 1986. He received the O.D. Doctor of Optometry degree in Optometry from Abia State University, Uturu, Nigeria, in 2008 and the MSc in Investigative Ophthalmology and Vision Sciences in The University of Manchester, UK in 2013. In 2015, I joined the Department of Optometry, Abia State University, as a Lecturer. His current research interests include glaucoma, ocular trauma, ocular genetics, preventive optometry, visual psychology and psychopathology. Dr. Chikezie is a member of the Nigerian Optometric Association (NOA) and the Optometrist and Dispensing Opticians Registration Board of Nigeria. He is the CEO of Healthy-hope Lifestyle Centre, Nigeria. He was awarded the best clinician by the President, NOA in 2009 and has joined and led several community health care teams in Nigeria and UK to offer free medical and eye health care services. He is an innovative researcher and is currently pursuing his Ph.D. in Optometry in The University of Manchester, UK.

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Prevalence estimates for myopia in children and young people in 2013-2017

Silvia Gamboa Saavedra Centro de Oftalmología Bonafonte, Spain

Objective: To compare prevalence estimates for myopia in children and young people in 2013–2017.

Methods: Retrospective study of the ophthalmology history of children (6–9 years old) and young people (10–15 years old) from 2013 to 2017 was conducted in Barcelona. All of them were with diagnosis of myopia and presenting visual acuity \geq 0.5 and \leq 0.4, respectively.

Results: The estimated prevalence of myopia in children aged 6–9 years old and young people 10–15 years old was higher in the last five years in both groups. In last five years, prevalence estimates were higher for children, 17% vs. 33% (p <0.001) and for young people 30% vs. 47% (p<0.001) and for all levels of myopia severity: <2D 12% to 18% (p<0.001), >/= 2D -<6D 12% to 25% (p<0.001) and >/= 6D 1-6% (p<0.001).

Conclusions: Using similar methods, the prevalence of myopia in children and young people in Barcelona, appears to be higher in last 5 years. What are the reasons for the increase in prevalence of myopia? What are we doing to try to slow down the progress of myopia? Reducing the age of onset of myopia is of great concern. Ophthalmologists and optometrist have to go on looking for options to reduce the risk of myopia and to educate children and young people for reducing computer vision syndrome.

Biography

Silvia Gamboa Saavedra got her graduate degree from B.A. University, Medical School, Argentina in 1994 and she got her Master and Specialist in Ophthalmology at Argentine Council Board of Ophthalmology and Health Ministry. She completed an Ophthalmology residency at Juan A Fernández Hospital, B.A., Argentina and a fellowship in Pediatric Ophthalmology and Strabismus at R Gutierrez Hospital, B.A., Argentina. She was consultant in Pediatric Ophthalmology and Strabismus in Argentina for 10 years till 2005 when she flew to Barcelona, Spain, where she lives with her husband. She is an active assistant and she has lectured at national and international optometry and ophthalmological congresses for more than 20 years.

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Is there still a place for the primary care optometrist?

Pamela J Miller

Southern California College of Optometry, USA

As the number of private practices decreases in favor of multi-doctor or multi-disciplinary offices, health maintenance organization (HMOs), preferred provider organization (PPOs), and chain-store practices, the question of survival of the private practice or solo practitioner remains a concern to the profession as well as the individual doctor. As insurance companies and increasing governmental oversight grows, the private practitioner can feel that he or she is obsolete, overwhelmed, or simply unable to cope with the changing healthcare picture. As the profession grows, with increasing responsibility and ever expanding scope of licensure, the issue of quality of care, prevention of litigation, meeting or exceeding the patient's needs, and coordinating with other practitioners to better care for the patient population continues to grow. Weighing the viable options can be equally daunting for the experienced practitioner as well as the newly licensed professional. Options may be limited due to financial constraints, geographic restrictions, practitioner age and experience, and proximity of patients and professional or other health-care colleagues and urgent care or emergency services. Before signing the death-knoll of private practice it is essential to weigh all the options, the benefits and detractors, and reassess the projected future of the private practicioner and this mode of practice.

Biography

Pamela J Miller has opened her solo practice in Highland, CA, in 1973. She is a Graduate from the Southern California College of Optometry and Loma Linda College of Law, and a Life Member of the American Optometric Association, a Charter Member of the AOA Contact Lens Section, an American Academy of Optometry Fellow and a Distinguished Practitioner in the National Academies of Practice. She was the first woman on the California Optometric Association Board of Trustees, the first female OD on the CA State Board of Optometry and the first OD on the CA Board of Medical Quality Assurance. She has served on numerous boards, was the first President of the American Optometric CE for five years. She lectures extensively, and has written seven books and over 250 articles, while serving as a Contributing Editor to numerous journals for over 40 years.

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Prevalence and risk factors for myopia and hyperopia in an adult population in southern India

Sanil Joseph Aravind Eye Care System, India

Statement of the Problem: Myopia is the most common cause of refractive errors in both children and adults in many countries. Comparisons of adult myopia prevalence across countries are complicated by variations in the age ranges of populations studied, definitions of myopia and secular trends in environmental risk factor. The aim of this study was to investigate prevalence and risk factors for myopia, hyperopia and astigmatism in southern India.

Methodology: Randomly sampled villages were enumerated to identify people aged \geq 40 years. Participants were interviewed for socioeconomic and lifestyle factors and attended a hospital-based ophthalmic examination including visual acuity measurement and objective and subjective measurement of refractive status. Myopia was defined as spherical equivalent (SE) worse than -0.75 diopters (D) and hyperopia was defined as SE \geq +1D.

Findings: The age-standardized prevalence of myopia and hyperopia were 35.6% (95% CI: 34.7–36.6) and 17.0% (95% CI: 16.3–17.8) of those with myopia, 70% had advanced cataract. Of these 79% had presenting visual acuity (VA) <6/18 and after best correction, 44% of these improved to \geq 6/12 and 27% remained with VA <6/18. In multivariable analyses excluding advanced cataract, increasing nuclear opacity score, current tobacco use and increasing height were associated with higher odds of myopia. Higher levels of education were associated with increased odds of myopia in younger people and decreased odds in older people. Increasing time outdoors was associated with myopia only in older people. Increasing age and female gender were associated with hyperopia and nuclear opacity score, increasing time outdoors, rural residence and current tobacco use with lower odds of hyperopia.

Conclusions: In contrast to high income settings and in agreement with studies from low income settings, we found a rise in myopia with increasing age reflecting the high prevalence of advanced cataract. This suggests that older people would benefit more from cataract removal than spectacle correction.



Recent Publications:

- 1. Morgan I G, Iribarren R, Fotouhi A and Grzybowski A (2015) Cycloplegic refraction is the gold standard for epidemiological studies. Acta ophthalmologica 93(6):581-5.
- 2. Foster P J and Jiang Y (2014) Epidemiology of myopia. Eye 28 (2): 202-8.
- 3. Pan C W, Cheng C Y, Saw S M, Wang J J and Wong T Y (2013) Myopia and age-related cataract: a systematic review and meta-analysis. American Journal of Ophthalmology 156 (5): 1021-33.

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- 4. Pan C W, Ramamurthy D and Saw S M (2012) Worldwide prevalence and risk factors for myopia. Ophthalmic & physiological optics: the journal of the British College of Ophthalmic Opticians 32 (1): 3-16.
- 5. Vashist P, Talwar B, Gogoi M, Maraini G, Camparini M, Ravindran R D, et al. (2011) Prevalence of cataract in an older population in India: the India study of age-related eye disease. Ophthalmology 118 (2): 272-8.

Biography

Sanil Joseph holds an MSc. in Public Health from the London School of Hygiene & Tropical Medicine and a Master's in Hospital Administration (MHA) from Mahatma Gandhi University, India. For the last 13 years, he has been working as a Senior Faculty and Health Management Consultant at the Lions Aravind Institute of Community Ophthalmology, Aravind Eye Care System, Madurai, India. His primary role in the organization is to anchor health services and epidemiological research, and he has published many scientific papers in reputed international peer reviewed journals. In 2012, he was awarded a Masters Fellowship from the Wellcome Trust UK as a part of which he successfully completed a Masters in Public Health with specialization is Health Services Research at the London School of Hygiene & Tropical Medicine. His current areas of research include refractive errors, use of telemedicine in screening of diabetic retinopathy and primary eye care.

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Comparison of the Snellen acuity chart with the spectrum eye care software LogMAR chart amongst children of school going age

Thokozile Ingrid Metsing University of Johannesburg, South Africa

Most vision screening protocols worldwide rely on the measurement of visual acuities (VAs) to detect visual anomalies amongst children of school-going age. This is despite the fundamental design flaws in the Snellen chart. However, there appears to be a growing demand for the usage of modern technology in the eyecare profession. The aim of this prospective and quantitative study was to evaluate the equivalence of a standard Snellen chart compared to the Spectrum Eyecare Software LogMAR chart in evaluating VAs amongst children of school going age. Normative data was collected from three randomly selected schools in Johannesburg (South Africa) on the non-clinical population of 209 children of school-going age mean 10.13±2.45 years. Monocular and binocular VAs was measured using the Snellen chart at six meters and the spectrum computer software program at three meters. The statistical significant differences (p<0.05) were determined using ANOVA for distance binocular and monocular VAs using the Snellen chart and the Spectrum Eyecare Software. The performance of the Spectrum Software LogMAR was found to be one line better than that of the Snellen chart. However, the Snellen chart still remains the simple, easily accessible and inexpensive method to be used for vision screening amongst children of school-going age compared to the Spectrum Eyecare Software.

Recent Publications:

- 1. Perera C, Chakrabarti R, Islam F M A and Crowston J (2015) The eye phone studies: reliability and accuracy of assessing Snellen visual acuity using smartphone technology. Eye (London, England) 29 (7): 888-894.
- 2. Lodha V S (2015) Comparison of visual acuity measurement by smartphone based application vs. conventional Snellen visual acuity chart. International Journal of Enhanced Research in Medicines and Dental Care 2(6): 39-41.
- 3. Gounder P A, Cole E, Colley S, Hille D M (2014) Validation of a portable electronic visual acuity system. Journal of Manufacturing Technology Management 3 (2): 35-39.
- 4. Zhang Z T, Zhang S C, Huang X G, et al. (2013) A pilot trial of the iPad tablet computer as a portable device for visual acuity testing. Journal of Telemedicine and Telecare 19 (1): 55-59.
- 5. Trivedi R H, Wilson M E, Peterseim M M, Cole K B and Teed R G W (2010) A pilot study evaluating the use of EyeSpy video game software to perform vision screening in school-aged children. Journal of AAPOS 14.

Biography

Thokozile Ingrid Metsing is currently a Lecturer at the University of Johannesburg. This article is part of the research conducted by her towards her DPhil study, entitled: "Strategies to improve school vision screenings at primary health care level in Johannesburg, South Africa". She has published six articles with three of them currently under review from the *African Vision and Eye Health and Ophthalmology Clinics and Visual Sciences* journals.

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Special Session Day 2

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Julia Pulliam

St. Louis Healthcare System, USA

Angelina F. Bonner

VA Illiana Health Care System, USA



Challenges beyond the phoropter: Part II retina/OCT symposium

The eye exam does not stop there. Eyecare practitioners have the privilege and ability to diagnose a variety of retinal conditions using the Ocular Coherence Tomography (OCT). With the OCT, we can extend our reach beyond the phoropter to aid in the diagnosis and management of our patients' ocular and or systemic health. We will present a variety of clinical cases that demonstrate the importance of the OCT in order to accurately diagnose and subsequently manage and coordinate the care of our patients.

Biography

Julia Pulliam attended Indiana University College of Optometry and graduated with Doctor of Optometry degree. Dr. Julia is staff Optometrists at the St. Louis VA Medical Centre. Julia is an active member of the Armed Forces Optometric Society (AFOS), the American Optometric Society (AOA), the American Academy of Optometry (AAO), and the St. Louis Optometric Society (SLOS). At St. Louis VA, she served as both Optometry Residency and Externship Coordinator in addition to Contact Lens Coordinator. Currently, she is serving as the Acting Chief of Optometry.

Angelina Bonner earned her Bachelor of Science from Bradley University and her Doctor of Optometry degree from Indiana University. As a doctoral candidate, Dr. Bonner performed contact lens research and presented on developing a method to assess on eye contact lens wettability at the 2009 Academy of Optometry meeting. During her residency at the St. Louis Veterans Affairs Medical Center(VAMC), she specialized in ocular disease, specialty contact lenses, and primary care. Dr. Bonner has presented on several complex ocular disease cases both locally and nationally during her career. Following residency, Dr. Bonner's passion for serving veterans led her to the Dallas VAMC where she managed complex ocular disease, traumatic brain injury cases, and specialty contact lens care. Dr. Bonner currently enjoys working as the Director of Specialty Contact Lenses, staff optometrist, and attending at the VA Iliana Healthcare System in Danville, IL. In addition to educating students and residents with didactic activities and clinical training, Dr. Bonner holds adjunct faculty positions at several universities. In fall 2017, she earned the distinguished title of Fellow of the American Academy of Optometry. Dr. Bonner is currently licensed in Texas, Illinois, and Missouri.

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Angelina F. Bonner

VA Illiana Health Care System, USA

Julia Pulliam

St. Louis Healthcare System, USA



Challenges beyond the phoropter: Part III anterior segment

The eye exam does not stop there. Eyecare practitioners have the privilege and ability to diagnose a variety of retinal conditions using the Ocular Coherence Tomography (OCT). With the OCT, we can extend our reach beyond the phoropter to aid in the diagnosis and management of our patients' ocular and or systemic health. We will present a variety of clinical cases that demonstrate the importance of the OCT in order to accurately diagnose and subsequently manage and coordinate the care of our patients.

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Scientific Tracks & Abstracts Day 2

Optometry 2018

···· Day- 2

SESSIONS

Neuro Optometry | Glaucoma | Ocular Diseases | Lenses | Retina

Chair: Carolyn Carman, University of Houston, USA

SESSION INTRODUCTION

- Title: Neuro-optometric rehabilitation of Mild Traumatic Brain Injury (mTBI) Joseph Hallak, State University of New York, USA Jeffrey Becker, Pennsylvania State University, USA
- Title: Toric orthokeratology contact lenses for patients with corneal elevation differences Nicholas Gidosh, Lehigh Valley Eye Care Associates, USA
- Title: Ocular burning-smartphone and symptoms in university students Alejandra Mendivelso Suárez, Universidad de la Salle, Colombia
- Title: Social capital, human capital and flight paths to opportunity and employment for visually impaired John A Patterson, St. Vincent's School for Sensory Impairment, UK
- Title: Ocular graft-versus-host disease and treatment with scleral contact lenses Evan J Kaufman, University of Virginia, USA
- Title: Ophthalmic clinical trials: A global perspective and how to incorporate them into your practice Jason Chin, Andover Eye Associates, USA
- Title: Internal lens structure changes during simulated accommodation Saleha Al-atawi, Cardiff University, UK
- Title: Mesopic pupillary state in type 2 diabetics without retinopathy: A review Shroug M. Aldaham, Ministry of Education, Saudi Arabia





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Neuro-optometric rehabilitation of Mild Traumatic Brain Injury (mTBI)

Joseph Hallak¹ and Jeffrey Becker² ¹State University of New York, USA ²Pennsylvania State University, USA

TBI is by definition a complex pathophysiological process affecting the brain, induced by biomechanical forces. It is an injury to the brain resulting in three categories of symptoms: physical/somatic, e.g. headache, vision, GI disturbance; cognitive, e.g. attention, memory and; psychiatric, e.g. mood swing, personality changes. Most of these symptoms should get better within 2-3 weeks of total rest (sometimes more) barring any second impact syndrome. A concussion lasting less than 30 minutes with a Glasgow coma scale (GCS 13-15) is considered mTBI. It can result in temporary or permanent neurological symptoms. Neuro-imaging tests such as CT scan or MRI may or may not show evidence of any damage. High school football accounts for 47% of all reported sports concussions, followed by ice hockey and soccer. An mTBI accounted 82% of the 340,000 cases of blast injuries in the US military between 2000 and 2015. Highlights of clinical vision and perception examination and rehabilitation of the mTBI patients include the following: thorough history, correction of small errors, out of instrument subjective examination, contrast sensitivity and glare assessment, monocular, bi-ocular and binocular accommodative facility, vergenses, saccades and fusional ranges. Treating patients with equipment that offers visual, vestibular and proprioceptive abilities will provide the best outcome. Devices and methods tapping multisensory system and featuring feedback with proprioceptive and balance capability are essential for office and home. That is because the main goals of rehabilitation are endurance, integration and internalization of learned skills for lasting long term benefits and avoiding regression after therapy. Keep in mind the three phases of neuro-optometric rehabilitation: visual stabilization: postural/peripheral awareness, monocular skills; binocular vision integration: oculomotor/accommodative, convergence, stereopsis, localization-static and dynamic; visual automaticity: multisensory integration.

Recent Publications:

- 1. Capó-Aponte J E, Jorgensen-Wagers K L, Sosa J A, et al. (2017) Visual dysfunctions at different stages after blast and non-blast mild traumatic brain injury. Optom Vis Sci. 94:7–15.
- 2. Armstrong R A, McKee A C and Cairns N J (2017) Pathology of the superior colliculus in chronic traumatic encephalopathy. Optom Vis Sci. 94:32–42.
- 3. Poltavski D, Lederer P and Cox L K (2017) Visually evoked potential markers of concussion history in patients with convergence insufficiency. Optom and Vision Science 94(7):742–750.
- 4. Eisenberg MA, Meehan WP and Mannix R (2014) Duration and course of post-concussive symptoms. Pediatrics 133 (6):999–1006.
- 5. PR and Berkovic SF (2011) Concussion: The history of clinical and pathophysiological concepts and misconceptions. Neurology 57(12):2283–2289.

Biography

Joseph Hallak is an Optometrist. He was a Founder and Chairman of a continuing education study group and Director of the Contact Lens and Low Vision Clinics. Hallak is an adjunct Assistant Clinical Professor, the State University of New York, College of Optometry and Adjunct Clinical supervisory faculty, the New England College of Optometry and Salus University. He is a contributing editor to Primary Care Optometry News. He is a member of certain Optometry societies.

Jeffrey Becker is a graduate of the Pennsylvania State University and graduated from The Illinois College of Optometry. He has been a practicing Optometrist in Northeastern Pennsylvania for over 34 years, with a specialty practice in Rehabilitative Optometry. Becker is an adjunct faculty member at Misericordia University, Dallas. He examined and treated over 3000 head injury, stroke, and neurologically impaired patients ranging in ages from birth to senior citizens. Becker recently accepted an appointment by Governor Wolfe to be a board member on the State board of Optometry in 2017.

Optometry & Vision Science

October 08-09, 2018 | Edinburgh, Scotland

Toric orthokeratology contact lenses for patients with corneal elevation differences

Nicholas Gidosh Lehigh Valley Eye Care Associates, USA

Orthokeratology is a well-established process by which the corneal surface is reshaped in order to correct refractive ametropia through the use of specific contact lens designs. Orthokeratology lenses are reverse geometry lenses specially designed to have very low clearance over the pupil. These designs are comprised of different zones to either provide treatment or stabilize the lens and can be organized into two broad categories: corneal refractive therapy (CRT, Paragon vision sciences, Inc.) or vision shaping treatment (VST, Bausch + Lomb). This lecture will review fundamentals in orthokeratology as well as troubleshooting common problems faced in practice. The presentation will then discuss more advanced design options available to apply ortho-k fitting to more patients by focusing on toric designs as well as describing other ways of customizing a fit. This will be done through discussion of elevation data obtained through a corneal topographer including how to measure the values and apply it when designing an orthokeratology lens. Topographical data is critical in understanding the shape of a patient's corneal surface and thereby designing an appropriately fitting contact lens. Topographical maps will be discussed and analyzed to explain how to troubleshoot different problems and guide custom lens design.



Figure 1: Shows an apparently clinically spherical cornea.



Recent Publications:

- 1. CC, Cheung SW and Cho P (2012) Toric orthokeratology for highly astigmatic children. Optometry and Vision Science. 89 (6): 849–855.
- 2. J, Cardona G and Quevedo L (2012) Toric double reservoir contact lens in orthokeratology for astigmatism. Eye Contact Lens. 38 (4): 245-251.
- 3. S W, Cho P and Chan B (2009) Astigmatic changes in orthokeratology. Optometry and Vision Science. 86 (12): 1352-1358.
- 4. D, Malet J, Hoang-Xuan T and Azar DT (2011) Corneal elevation topography: best fit sphere, elevation, asphericity, toricity, and clinical implications. Cornea. 30 (5): 508-515.
- 5. Salmon T O and Horner D G (1995) Comparison of elevation, curvature, and power descriptors for corneal topgraphic mapping. Optometry and Vision Science.

Biography

Nicholas Gidosh is an Optometrist at Lehigh Valley Eye Care Associates in Allentown Pennsylvania. He has received his Doctor of Optometry Degree from the Pennsylvania College of Optometry at Salus University, where he is currently doing his part time as a Clinical Instructor. He has also completed a Cornea/ Contact Lens Residency at the Michigan College of Optometry at Ferris State, and is a Fellow of the American Academy of Optometry. He has served as a Clinical Investigator for studies involving hybrid, scleral, multifocal, and orthokeratology lenses. He has also presented lectures and posters at several conferences.

Optometry & Vision Science

October 08-09, 2018 | Edinburgh, Scotland

Ocular burning-smartphone and symptoms in university students

Alejandra Mendivelso Suárez Universidad de la Salle, Colombia

Communication is one of the primary needs of young people, since technological evolution has generated the creation of devices such as smart mobile phones in order to entertain, communicate, and generate access to different sources of information. Most university students have a smart mobile device that they use in all their daily activities. The overuse of these smartphones can produce general and ocular symptoms. During 2017, we studied 204 university students in Bogotá - Colombia to evaluate symptoms by use of smartphone.

Age	
< 15 years	6.11 %
20- 25 years	91.60 %
25 years	1.53 %
> 26 years	0.76%

 Table 1: Students' age - SPADIES 2016

Evidence showed changes in behavior such as decreased sleep time or stop eating. In this study we found general symptoms as: headache, pain in hands and shoulders, blurred vision, photophobia and ocular burning.

Biography

Alejandra Mendivelso Suárez is a assistant professor at El Bosque University Bogotá and KOL for Coopervision in Colombia. Alejandra did her education in magister vision sciences at University of La Salle. She is also an optometrist at University of La Salle. Alejandra relevant course work includes El Bosque University - course in scientific writing and evaluation in research; University of Oklahoma - Designing courses for significant learning, etc.

Optometry & Vision Science

October 08-09, 2018 | Edinburgh, Scotland

Social capital, human capital and flight paths to opportunity and employment for visually impaired

John A Patterson St. Vincent's School for Sensory Impairment, UK

Statement of the Problem: High unemployment amongst visually impaired (VI) young people remains a global concern; as does the connected impact on health and wellbeing attached to the lack of opportunity and meaningful engagement. This study documents how linking schools, universities, and businesses to mobilize resources and support for career choice for VI students (Patterson and Loomis 2016) in Liverpool, England has developed and is progressing with measurable outcomes attached to friendship group generation and employment opportunities on a local, national and international platform. Driven through participation in sport and the raising of self esteem, we connect Science Technology Engineering and Maths (STEM) and research development and innovation surrounding the making and sharing of VI access technologies with the international VI community through the physical SIGHTBOX medium (www.sightbox.org.uk) Connecting with community , VI engagement in sport and making reference to the United Nations Sustainable Development Goals (SDG'S) throughout, we present our outcomes focussed formula for the research community consideration in seeking to connect more closely medicine with education through teaching and learning i.e. social/human capital + reverse inclusion + service learning + creativity = outcomes.



Recent Publications:

- 1. Hewett, R., & Keil, S. (2015) Investigation of data relating to blind and partially sighted people in the Quarterly Labour Force Survey: October 2011-September 2014. University of Birmingham with Royal National Institute of Blind People, England.
- 2. Patterson, J., Loomis, C (2015) Teacher Education for Equity and Sustainability Network (TEESNet) Eighth Annual Conference 9th July 2015, Liverpool Hope University From Curriculum Makers to World Shapers: Building Capacities of Educators for a Just and Sustainable World. Post conference paper 'Education and Enterprise' Village: supporting visually impaired (VI) learners locally, nationally and internationally through 'values' education and service-learning.
- 3. Patterson, J., Loomis, C (2016) Manuscript ID BJVI-15-0044 British Journal of Visual Impairment "Linking schools, universities and businesses to mobilize resources and support for career choice and development of students who are visually impaired".

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Optometry & Vision Science

October 08-09, 2018 | Edinburgh, Scotland

4. Patterson, J., Loomis, C (2018) Teacher Education for Equity and Sustainability Network (TEESNet) Tenth Annual Conference 10th Annual Conference, Liverpool Hope University September 2017 Making the Sustainable Development Goals Real: The Role of Teacher Education in Promoting Quality Education for Sustainable Development and Global Citizenship Education in Schools. LITTLE STORIES and BIG PICTURES: Quality education addresses social and economic inequality for the visually impaired locally and globally.

Biography

Originally an engineer, John retrained as a primary teacher serving in Liverpool inner city schools and across public private and voluntary sectors within EU Objective One programmes as community and education consultant leading to a Senior Lecturer role as Head of Physical Education on teacher education programmes at Liverpool Hope University. His MSC and PhD surround social capital, social enterprise, volunteerism and curriculum design. He is currently Principal at St. Vincent's, a residential non-maintained School for VI in West Derby Liverpool rated as outstanding by The Office for Standards in Education. His research and focus remains with securing outcomes for VI young people.

Optometry & Vision Science

October 08-09, 2018 | Edinburgh, Scotland

Ocular graft-versus-host disease and treatment with scleral contact lenses

Evan J Kaufman University of Virginia, USA

Over the past several decades, hematopoietic stem cell transplantation (HCT) has become the routine treatment for a number of hematological disorders (e.g., leukemia, lymphoma), as well as treatment for some autoimmune diseases and inherited metabolic disorders. One possible complication after stem cell transplantation is graft versus-host disease (GVHD), an inflammatory condition that can affect many different organs, including the eyes. Ocular manifestations of GVHD are common and can significantly decrease quality of life. Without a basic understanding of ocular GVHD, the condition can be challenging to diagnose and adequately treat. This lecture summarizes the basics of HCT and ocular GVHD, and gives an example case of ocular GVHD treated with scleral lenses.



Ocular Graft vs Host Disease

Recent Publications:

- 1. S Z and Aylward J (2017) A review of ocular graft-versus-host disease. Optom Vis Sci. 94 (5): 545-55.
- 2. Otchere H, Jones L and Sorbara L (2017) Effect of time on scleral lens settling and change in corneal clearance. Optom Vis Sci. 94 (9): 908-13.
- 3. Balasubramaniam S C, Raja H, Nau C B, et al. (2015) Ocular graft-versus-host disease: A review. Eye Contact Lens. 41 (5): 256-61.
- 4. Nassiri N, Eslani M, Panahi N, et al. (2013) Ocular graft-versus-host disease following allogeneic stem cell transplantation: A review of current knowledge and recommendations. J Ophthalmic Vis Res. 8 (4): 351-58.
- Filipovich A H, Weisdorf D, Pavletic S and et al. (2005) National Institutes of Health Consensus Development Project on criteria for clinical trials in chronic graft-versus-host disease: I. Diagnosis and staging working group report. Biol Blood Marrow Transplant.

Biography

Evan J Kaufman got his undergraduate degree from Southern Illinois University. He then went on to earn his doctorate at the Indiana School of Optometry. After graduation, he continued his education and completed a residency in ocular disease at the University of Kentucky. He is an adjunct clinical instructor at the New England College of Optometry. He is expertise in Blepharitis, Conjunctivitis (Pink Eye), Farsightedness (Hyperopia), Glaucoma, Nearsightedness, Astigmatism, Eyelid Swelling, Eye Care.

Optometry & Vision Science

October 08-09, 2018 | Edinburgh, Scotland

Ophthalmic clinical trials: A global perspective and how to incorporate them into your practice

Jason Chin Andover Eye Associates, USA

Clinical trials are an important entity for the advancement of medicine. At any given time, anywhere around the globe, a Clinical trial is occurring and new advancements are being made. As optometrist and providers of eye care, we should be involved in this to further help the advancement of our field and specialty. This talk will give a global perspective and give some overview of the different clinical trials occurring around the world in the field of optometry and ophthalmology. An overview will be discussed on what the particular focuses are for various regions of the world; whether it be pharmaceutically based, disease detection, disease prevention, disease treatment or disease elimination and how the research may impact our field. Many of these issues are ones that we encounter and deal with, every day in our practice. This talk will also discuss some of the benefits of incorporating clinical trials into your practice and briefly review things to consider when incorporating them into your practice.

Biography

Jason Chin is a graduate of McGill University and he received his Optometry Degree from the New England College of Optometry in 2004, where he also completed his Cornea and Contact Lens Residency in 2005 and was awarded the American Optometric Foundation's "Dr. George Mertz Contact Lens Residency Award". He primarily sees patients in a private practice setting but is also a Clinical Investigator for Ora, Inc. and an Investigator/Consultant for national clinical trials on contact lenses for various contact lens companies around the US. His main area of interest and expertise are in Specialty Contact Lenses and Clinical Research. He is a Fellow of the American Academy of Optometry in the Cornea and Contact Lens Section, and is Board Certified and a Diplomat of the American Board of Optometry.

Optometry & Vision Science

October 08-09, 2018 | Edinburgh, Scotland

Internal lens structure changes during simulated accommodation

Saleha Al-atawi, Cardiff University, UK

Aim: Since the internal structural changes that occur during the lens accommodation process are not fully understood, in this study we aimed to analyze lens fibre widths during simulated accommodation.

Methods: Porcine eyes (n=11) were dissected and attached to a lens stretcher. 3D image stacks (between 120 μ m to 240/270 μ m depth) of the anterior and posterior surfaces of five lenses, while immersed in artificial aqueous humour solution, were acquired using confocal microscopy in the un-stretched configuration and then the stretched configuration. Three lenses remained in the un-stretched configuration and three lenses were subjected to stretching. All six lenses were fixed with 4% paraformaldehyde, snap frozen and then serially cut into cryosections of 25 μ m in thickness. 1 mm interval sections were incubated in PBS- wheat germ agglutinin-Hoechst 33342 solution. Lens fibre widths were measured following acquisition of fluorescent images of each lens at different depths.

Result: From the confocal images, there was a significant difference between unstretched and stretched configurations in both anterior (mean lens fibre width: $5.1\pm0.589 \mu m$ versus $5.625\pm0.345 \mu m$, p<0.0001) and posterior surfaces ($5.55\pm0.16 \mu m$ versus $5.67\pm0.25 \mu m$, p<0.0001). In fluorescent images, lens fibre widths were unchanged between unstretched and stretched configurations at depths of 1 mm (mean lens fibre width: $5.7\pm0.29 \mu m$, versus $5.7\pm0.52 \mu m$, p=0.411), and at 5 mm ($7.7\pm1.89 \mu m$, versus $7.9\pm2.14 \mu m$, p=0.2309 and at 6 mm ($6\pm1.08 \mu m$, versus $5.97\pm0.89 \mu m$, p=0.814). An increase in mean lens fibre widths was observed in stretched lenses at depths 2 mm (mean lens fibre width: $6.9\pm1.76 \mu m$, versus $7.9\pm1.9 \mu m$, p<0.0001), and at 3 mm ($8.9\pm2.42 \mu m$, versus $8.98\pm2.326 \mu m$, p=0.0002), lastly at 4 mm ($8.45\pm2.8 \mu m$ versus $9.1\pm2.2 \mu m$, p=0.033). A decrease in cortical lens fibre widths occurred (mean lens fibre width: $6.67\pm1.37 \mu m$ versus $5.65\pm0.29 \mu m$, p<0.0001) at 7 mm.

Conclusion: Controversy exists as to whether nuclear lens fibres are altered during accommodation. This study shows that lens fibre width alters at some depths, but not in others during accommodation.

Biography

Saleha Al-atawi is a PhD student in Cardiff University. I have Master Degree of optometry from NSW University at Australia 2012 and my Bachelor Degree in optometry from king Saud University, Riyadh, Saudi Arabia 2007. My current research focus on understanding the eye lens structure under accommodation mechanism, Also, main interesting areas are eye health care, eye lens structure and cataract disease.

Optometry & Vision Science

October 08-09, 2018 | Edinburgh, Scotland

Mesopic pupillary state in type 2 diabetics without retinopathy: A review

Shroug M. Aldaham Ministry of Education, Saudi Arabia

Background: It is known that the pupil diameter decreases under high illumination levels and increases under low illumination levels. Several reports showed changes in mesopic pupillary function in patients with diabetic retinopathy. There is little information however about mesopic pupillary changes in diabetics without retinopathy.

Purpose: To review pupillary size changes under mesopic luminance conditions in type 2 diabetics without retinopathy.

Methods: A literature search was conducted on pupillary size changes in diabetics without retinopathy. The search criteria considered the type of diabetes, luminance conditions under which the pupil diameter was measured, and the instrument used.

Results: There was a general consensus that diabetics show smaller pupil diameters compared to normal healthy subjects. The testing method and luminance conditions varied across studies. Pupil diameter changes were affected by the retinopathy progression. Little information was reported for mesopic pupillary changes in diabetics without retinopathy. Some studies specified the type of diabetes while others did not.

Conclusions: Care should be taken when comparing pupil diameter changes between studies related to the luminance level and type of instrument used. In this presentation, mesopic visual function data for type 2 diabetics without retinopathy will be presented, aiming to show its independency from pupil diameter.

Biography

Shroug M. Aldaham has graduated from Complutense University of Madrid (UCM), Spain with a PhD degree in Optics, Optometry and Vision (with distinction). She has a BSc (Hons) in Optometry from King Saud University (KSU), Riyadh, Saudi Arabia, and a Master of Science in Vision Science from the University of Waterloo, Ontario, Canada. She has joined the Optometry department at KSU as a demonstrator (an academic position that prepares for professorship) before joining the Master program in Canada. After her masters she returned to Riyadh and later joined the PhD program at UCM. Both of her Masters and PhD studies were Saudi government-funded research grants. She has a research experience in pediatric vision screening and visual function testing in diabetics and has published in international optometric and vision research meetings. Her research interests are pediatric and diabetic visual function.

Notes:

Financial support: Supported by a doctoral scholarship from the Saudi Ministry of Education to Shroug Aldaham.; Disclosure: The author has no financial or proprietary interest in the testing materials or methods described; Declaration: Part of the data that will be presented was presented at the 2015 EVER congress (Nice, France).