



Welcome to Bausch and Lomb’s monthly research update.

With my background in clinical ophthalmic research, mainly of the anterior eye, Bausch and Lomb have asked me to produce an independent report of some of the interesting findings coming out of the research journals each month. As a busy practitioner, this should allow you to keep more up-to-date with cutting edge clinical research and allow you to locate the articles when you want to know more about a topic highlighted.

Professor James Wolffsohn is Head of Optometry at Aston University. James’ research and teaching interests mainly revolve around intraocular lenses, contact lenses, low vision and the measurement of accommodation. He has published over 90 peer reviewed academic papers, written books on Low Vision and Imaging and has given numerous international presentations. James is also a past President of the British Contact Lens Association.

Issue 1

The following key clinical peer reviewed journals will be reviewed:

JOURNAL	VOLUME
American Journal of Ophthalmology	148(3)
Archives of Ophthalmology	127(8)
British Journal of Ophthalmology	93(8)
Clinical and Experimental Optometry	92(4)
Contact Lens and Anterior Eye	32(4)
Cornea	28(8)
Investigative Ophthalmology and Visual Science	50(8)
Journal of Optometry	2(2)
Journal of Refractive Surgery	25(8)
Ophthalmic and Physiological Optics	29(5)
Ophthalmology	116(8)
Optometry and Vision Science	86(7)



www.academyofvisioncare.com

Acanthamoeba is a real contact lens issue

Ibrahim Youhanna and colleagues review the literature on ulcerative keratitis, noting that contact lenses are responsible for up to 95% of cases. They emphasise the importance of lens hygiene, lens care solution selection, wearing modality and user compliance as the key factors in reducing the risk of infection.

[Journal of Optometry 2009;2:60-66.](#)

What is the culprit for contact lens associated keratitis

The dynamic duo of Nathan Efron and Philip Morgan address this issue in an editorial to 'celebrate' 10 years of silicone-hydrogel contact lenses on the market. They present their suspicions that the high modulus of early siliconehydrogels may have overcome the benefits expected from the superior oxygen transmission of the material, resulting in the high rates of corneal infiltrates reported in several studies. *[Clinical and Experimental Optometry 2009;92:329-330.](#)*

Progression of symptoms despite lens removal is key to the differential diagnosis of microbial keratitis

An examination of nearly 300 cases of contact lens-related microbial keratitis showed that although symptoms increase with the severity of the condition and severe eye pain occurred in 22% to 39%, symptoms worsening after contact lens removal occurred in 85% to 97% making it most relevant in the differential diagnosis. Lesions <1mm are less suspicious of infection unless symptoms are progressive or an anterior chamber reaction is noted. Self reported poor health (predominantly respiratory tract infection) and thyroid disease was more common than in the general population. *[Optometry and Vision Science 2009;86:803-809.](#)*

Contact lens prescribing trends

Nathan Efron and Philip Morgan present a couple of papers on their ongoing survey of practitioner prescribing in the UK (part of a worldwide monitoring exercise conducted each year). Data over the past 15 years would suggest that contact lens opticians continue to fit about twice as many contact lenses in the UK than optometrists, fitting a slightly higher proportion of daily disposable lenses (32% vs 29%). They also highlighted that fewer than 40% of patients >45 years were fitted with presbyopic corrections! *[Contact Lens and Anterior Eye 2009;32:185-186; 191-192.](#)*



www.academyofvisioncare.com

Contact lens compliance in 2009

Pauline Cho writes an excellent editorial in *Contact Lens and Anterior Eye* highlighting the generally little progress that has been made in convincing patients to be compliant (also a strong theme of the recent International Society of Contact Lens Researchers meeting in Crete last week). She quotes the great philosopher Confucius who said "I hear and I forget. I see and I remember. I do and I understand." and highlights that even electric kettles provide instruction leaflets when we often don't for our patients. Unfortunately web based resources such as U-tube often reinforces bad habits! [*Contact Lens and Anterior Eye 2009;32:155-156.*](#)

Successful fitting of contact lenses to children

Jeff Walline and colleagues in the USA continue to report on the CLIP study (Contact Lenses in Pediatrics) this time showing the high continuation rate after the study both in the child group (8-12 year; 62%) and the teens (13-17 years; 80%) who went on to purchase lenses and solutions that had originally been provided for free. Both groups had few problems with wear and there was clearly strong parental support as they would have had to provide the finances. Clearly, the marketing and fitting of contact lenses to children as young as 8 years should receive more clinical focus. [*Contact Lens and Anterior Eye 2009;32:157-163.*](#)

Obstinance in using fluorescein use in contact lens practice

Ian Davies and Jane Veys of the Johnson and Johnson Vision Care Institute report on the use of fluorescein for soft contact lens care in a cohort of 2,116 practitioners across 5 European countries. Disappointingly as few as 25% of a countries eye care practitioners reported using fluorescein at least most of the time, and at best this was only 77% (in the UK). The flaws in the excuses given are clearly reasoned. [*Contact Lens and Anterior Eye 2009;32:187-189.*](#)

Fluorescein can be used to accurately assess tear meniscus height

A Spanish team examined the measurement of tear meniscus height in detail, showing that careful instillation of fluorescein does not affect the reading. However, the measurement should be taken shortly after instillation and in the centre of the lower lid as it increases with eccentricity. [*Ophthalmic and Physiological Optics 2009;29:526-534.*](#)



Epithelial changes in dry eye

A group from Houston, Texas were able to show epithelial damage (in the form of opaque cells) with dysfunctional tear syndrome (a more encompassing term for dry eyes proposed by the Dephi panel report, 2006) using scanning laser confocal microscopy. These opaque zones increased in area with increasing severity of symptoms, visual disturbance and vital dye staining and were shown to be several cells deep. [*American Journal of Ophthalmology* 2009;148:376-382.](#)

Tear instability causes temporary hyperosmolarity, resulting in corneal inflammation and causing symptoms of dry eye

Using a range of techniques from psychophysics to cell biology, researchers have confirmed a causal connection between tear instability and hyperosmolarity, considered the fundamental causes of dry eye.

[*Investigative Ophthalmology and Visual Science* 2009;50:3671-3679.](#)

This finding was supported by another article showing contact lens osmolarity was unrelated to the lens material and power, was constant over time and was correlated with comfort, tear film break-up time, conjunctival indentation and ocular sensitivity as well as lens water content. [*Optometry and Vision Science* 2009;86:857-867.](#)

Latent infections are common in eyes with allergic conjunctivitis

A study of 236 patients with allergic conjunctivitis, but no clinical evidence of infection, over 5 years found that 37% had concurrent latent infection. The authors note that the latent pathogens can stimulate inflammatory mediators, worsening the allergy.

[*Cornea* 2009;28:839-842.](#)

Limitations of corneal inlays in correcting hypermetropia

A 34 patient trial of hydrogel intra-corneal inlays found poor correction of refracting error, significant visual loss and scarring and many had to be explanted. [*Ophthalmology* 2009;116:1455-1460.](#)



Light adjustable intraocular lenses

Arturo Chayet and colleagues from Calhoun Vision report on a small study (n=14) on their light adjustable IOL showing promising refraction targeting and stability over a 9 month period. Pre-operative refractive error was, however, limited to 1.5D, although higher levels have apparently been tested in-vitro. The potential for a patient to test monovision was noted, although they would have to wear protective UV glasses during this period to prevent optical changes from ambient light exposure and why this could not be simulated with spectacles or contact lenses before cataract formation is not discussed.

[*Ophthalmology* 2009;116:1432-1435.](#)

Posterior zonules to the crystalline lens contribute substantially to accommodation

In a lens stretcher using monkey crystalline lenses, cutting the anterior zonules still allowed 69% of the power change to be maintained, demonstrating a significant role for posterior zonules in accommodation.

[*Investigative Ophthalmology and Visual Science* 2009;50:4017-4021.](#)

Implantable anterior chamber devices for continuous monitoring of intraocular pressure

A review of the advancement in strategies to measure intraocular pressure continuously indicates that implantable, wireless sensors are showing promise to improve the measurement (and hence hopefully treatment) of glaucoma. [*British Journal of Ophthalmology* 2009;93:992-996.](#)

MOST PROMISING DEVELOPMENT

New test for the diagnosis of bacterial endophthalmitis. [*British Journal of Ophthalmology* 2009;93:1089-1096.](#)

MOST INTRIGUING JOURNAL ARTICLE TITLE

Robot-assisted vitreoretinal surgery: Development of a prototype and feasibility studies in an animal model. [*Ophthalmology* 2009;116:1538-1543.](#)



www.academyofvisioncare.com

MOST FASCINATING FINDING

People living at 3600m above sea level in Bolivia have markedly supernormal multifocal electroretinographic amplitudes which continued to increase for the 72 day study period when acclimatized to sea level. Investigative [*Ophthalmology and Visual Science*](#) [2009;50:3964-3969.](#)

Next report

November 2009

James S Wolffsohn
Professor and Head of Optometry
Aston University,
Birmingham, UK



www.academyofvisioncare.com