NCC2016 Paper Abstracts
Free paper sessions
Monday, March 14, 2016 09:30 – 10:30
Netherlands, Veldhoven, de Koningshof, Baroniezaal
Organization Section: NCC/ BCLA
Moderator: Robin Chalmers

Paper Number: 9
Presentation time: 09:30-09:45
Prospective evaluation of new contact lens wearer retention rates
Anna Sulley, Graeme Young, Chris Hunt, Sarah McCready, Marie-Therese Targett, Ruth Craven
Purpose: To determine the retention rate (RR) for patients fitted with contact lenses (CLs) and to identify factors affecting lapsing.
Method: This multi-site, sponsor-masked study was a prospective evaluation of the current status of neophyte CL wearers. A representative range of UK practices registered neophytes to participate in 3 surveys over a year (1-, 3- and 12-months), online or via telephone interview.
Results: 532 patients were registered at 26 sites. Mean age was 35 years (range 16-73; 70% <45yrs); 62% were female. All but one were fitted with soft CLs and 66% were silicone hydrogels. Response rates were 61%, 53%, and 47% for 1-, 3- and 12-month surveys, respectively. Of those surveyed at 1-month, RR was 90.7% (292/322, 95%CI:87.0-93.4); at 12-months RR was 77.6% (194/250, 95%CI:72.0-82.3). RRs were similar for hydrogels (78.3%) and silicone hydrogels (76.5%). Of CLs originally dispensed, 46% were spherical, 37% toric and 16% multifocal; respective RRs were 81.3%, 75.3% and 68.6%. RR was 77.3% for both reusable and daily disposable lenses. RR for full-time wear was 89.2% versus 70.1% for part-time (p=0.0018). CL supply route was a significant factor; RR 66.7% if collected versus 85.0% if posted on request (p=0.032) and 89.7% if posted routinely (p=0.0003). Primary reasons cited for discontinuation included poor vision (41% overall), discomfort (36%), handling problems (25%). Of those unsuccessful at 12-months, 57% practitioners were unaware. 75% lapsed wearers anticipate wearing CLs again, although this varies by type (88% sphere, 67% toric, 64% multifocal). Key reasons to try CLs again include better vision (48%), comfort (43%) and handling (41%).
Conclusions: The 12-month RR (77.6%, 95%CI:72.0-82.3) for new wearers was consistent with a recent retrospective chart review (74.0%, 95%CI:70.1-77.6). Reasons for neophyte dropout vary from that with established CL wearers. To improve retention, multiple aspects can be improved upon including communication between practitioner and wearer.
Research funding received: Study sponsored by Johnson & Johnson Vision Care

Paper Number: 10
Presentation time: 09:45-10:00
Assessment of the Interaction Between a Natural Wetting Agent and Silicone Hydrogel Contact Lenses Containing PVP Using Novel Imaging Techniques
Daniel Hook, Katarzyna Wygladacz, Marjorie Rah
Purpose: Success with contact lens wear can depend on maintaining a smooth, wettable surface. Interactions between lens material and lens care formulations can help maintain surface moisture. This study assessed the interaction of hyaluronan (HA), a natural humectant, to two unique silicone-hydrogel lenses containing PVP, samfilcon-A and senofilcon-A, using novel imaging techniques.
Method: Morphology and distribution of HA sorbed from 0.1%(w/v) HA as well as a commercial solution (Biotrue MPS) on the two silicone-hydrogels was assessed by atomic force microscopy (AFM) imaging to quantitate surface roughness of lenses before and after incubation with HA solution. Confocal laser scanning (CLSM) and differential interference contrast (DIC) microscopies were novel techniques applied to assess characteristics associated with HA surface distribution.
Results: AFM surface roughness measurements before HA exposure were 2.5nm±0.4nm and 2.2nm±0.3nm for samfilcon-A and senofilcon-A, respectively. After incubation with 0.1% HA solution, RMS surface roughness decreased to 0.6±0.1nm and 0.7±0.4nm for samfilcon-A and senofilcon-A, respectively. The reduction in surface roughness was significant, $p<0.05$; however, the difference between materials was not significant. CLSM and DIC imaging illustrated a confluent, stained HA network that extended across the entire surface. The morphology of the HA network was consistent between the 0.1% HA and

commercial MPS solution and between the two silicone-hydrogel lenses.
Conclusions: The novel CLSM and DIC imaging offered a more comprehensive view of the lens surface and demonstrated an extensive coverage of HA on both PVP containing silicone-hydrogel lenses. The AFM measures confirmed that HA reduced roughness of the surface. Together, the combination of imaging techniques provided a unique picture of the interaction of HA and PVP containing silicone-hydrogel lenses.

Paper Number: 11
Presentation time: 10:00-10:15
Difference in Corneal Sagittal Heights from 10 to 15mm of Keratoconic Eyes Measured with Pentacam, Visante OCT and a Calculated Method
Stephanie Britton, Heinz Otchere, Chelsea Bray, Luigina Sorbara
Purpose: Sagittal height is important during scleral lens fitting. This study compares: Pentacam's internal measurement program, optical coherence tomography (Visante OCT) and sagittal height calculation using K's and e-values at 10 and 15mm chords. The sagittal height difference between these chords was calculated to determine a constant that could be added for measures taken only at 10mm.
Methods: Keratoconic patients had images taken with Pentacam™ and Visante™ OCT in both horizontal and vertical meridians. Sagittal heights were measured from the midpoint of a 10mm and 15mm chord to the anterior corneal surface using the caliper tools of Visante. The Pentacam determined the sag, using the Scheimpflug image presented under "sag height". The K readings (radii in both horizontal and vertical meridians) and e-values given by the Pentacam were used to calculate the sagittal height of the cornea at 10 and 15mm using the standard sag formula.
Results: 17 participants (14 males/3 females, 22 eyes) with a mean age of 36.95±7.9 years were enrolled. The mean sagittal height differences measured from 10mm to 15mm were 2.04±1.21mm and 3.55±1.22mm with Pentacam, 1.96±0.24mm and 2.16±0.36mm with Visante and 2.46±0.29mm and 2.78±0.53mm by calculation, in the horizontal and vertical meridians, respectively. The sagittal heights were significantly different comparing horizontal and vertical meridians using all methods, ($p<0.05$). Due to these differences, the constant that could be added to a 10mm measure is dependent on whether the 15mm sag in the vertical meridian is from the Pentacam or Visante and may range from 1.96mm to 2.46mm. In the horizontal meridian, a constant ranging from 2.16mm to 3.55mm could be used.
Conclusion: If using an instrument that measures sagittal height at 10mm only, adding the average distance from 10 to 15mm sagittal height (2.15mm horizontal and 2.83mm vertical) may be a good surrogate for sag at 15mm for a scleral lens fitting.
Research funding received: N/A

Paper Number: 4
Presentation time: 10:15-10:30
Clinical Outcomes of a Povidone-Iodine Based Contact Lens Cleaning Solution for Soft Contact Lens Wearers
Mark Willcox, Jacqueline Tan, Katherine Wong, Kathlene Watt, Ajay Vijay, Fiona Stapleton
Purpose: To evaluate the safety and efficacy of a povidone-iodine (PI) based contact lens (CL) cleaning and disinfecting solution during daily wear of frequent replacement soft CL wearers.
Methods: A prospective, single centre, open label clinical trial. At Baseline, assessments were conducted for participants' habitual lens care product. Participants were dispensed with the PI system for use with a new pair of their habitual CLs upon daily removal. Subjective responses and anterior ocular health assessments were conducted at 1 month and 3 months. Results at 1 month and 3 months (with PI) were compared with baseline using one-way ANOVA.
Results: Forty soft CL wearers (34 silicone hydrogel and 6 hydrogel) with average age 30 ± 13 years completed the study. Four used peroxide and 36 used multi-purpose disinfecting solutions at baseline. One case of asymptomatic corneal infiltrates (CIE) occurred at 3 months; this was the only lens-related adverse event. The overall incidence rate of CIEs was 1 per 100 participant-months, and with senofilcon A (most common SiHy lens; n=18) was zero. Corneal staining extent was lower at 3 months compared to baseline in each eye (0.39 ± 0.47 vs. 0.96 ± 0.89, $p=0.002$; 0.46 ± 0.51 vs. 1.10 ± 1.01, $p=0.001$ for right or left eyes respectively). No cases of solution-induced corneal staining were observed. No significant differences were found in

subjective comfort or vision, or for objective assessments of bulbar and limbal redness, and upper palpebral roughness and redness ($p>0.05$) between baseline and the follow-up visits.

Conclusions: PI reduced the level of corneal staining at 3 months, and only one CIE was observed over the course of the study. This study demonstrated that PI was compatible with a variety of commercially available frequent replacement soft CLs.

Research funding received: Study was supported by a grant from Ophtecs corp. Tokyo, Japan