

NCC 'Beyond 2020' Paper Abstracts  
Free paper sessions  
Sunday, March 15, 2020 15:00 – 16:00  
Netherlands, Veldhoven, de Koningshof,  
Beneluxzaal

**Organization Section:** NCC/ BCLA

**Moderator:** Michael Read

**Paper Number:** 19

**Presentation time:** 15:00-15:12

**International Association of Contact Lens Educators (IACLE): a successful global education model**

*Philip Morgan*

**Purpose:** Background: According to the World Health Organization, a shortage of trained human resources is a great challenge to increasing availability of eye care services and reducing preventable visual impairment worldwide. The global need for more optometry schools and skilled personnel point to a crucial role for IACLE, which provides educational materials and teaching aids to its global network of contact lens educators. Purpose: To determine the use of and attitudes to IACLE's resources, programs and events, and to explore IACLE's impact on members.

**Method:** An online survey was sent out by email in March 2018 to 825 IACLE members. It was conducted in English, and in Spanish and Korean. Data were entered in MS Excel. Categorical variables were summarised using frequency and percentages. Continuous measurements were presented using mean (SD).

**Results:** A total of 300 members in 48 countries completed the survey, a response rate of 36%. New IACLE Contact Lens Course was the most widely used resources (67%) followed by Case Reports and Image Gallery (both 48%). New ICLC received the highest satisfaction rating followed by Image Gallery and Research Updates (average 8.3, 8.1 and 8.0 respectively on 1-10 scale). Top three programs for satisfaction were: Fellowship scheme, Distance Learning Program and Student Trial Exam (7.8, 7.7, 7.6 respectively). Educator meetings,

Train-the-Trainer programs and World Congresses were considered IACLE's most important events. Members wanted IACLE to provide more tools for assessing students' practical skills, raising awareness of contact lenses and how to use technology in teaching. Most (92%) were extremely/very likely to recommend other educators to join.

**Conclusions:** IACLE members reported high levels of use and satisfaction with its resources and programs. The global cause of establishing more optometry schools could be helped by sharing curricula and using technology such as online education – a model already implemented by IACLE successfully.

**Research funding received:** None

**Paper Number:** 20

**Presentation time:** 15:12-15:24

**Development and testing of a risk score for serious and significant soft contact lens wear complications**

*Kathryn Richdale, Dawn Lam, Heidi Wagner, Aaron Zimmerman, Chandra Mickles, Luigina Sorbara, Beth Kinoshita, Bernard Rosner, Lynn Mitchell*

**Purpose:** To describe the development and outcomes of a survey designed to assess risk of soft contact lens (SCL) related "red eye" events.

**Method:** A risk survey was developed utilizing chart review, focus groups, and five fieldings to SCL wearers. A total of 1,003 SCL wearers completed the survey (age 12 to 33 years, 52% Caucasian, 67% female, 15% with active red eye event). Repeatability testing was conducted in subsets of patients who presented with and without red eye events. Forward selection logistic regression was used on 790 (including 128 serious/significant red eye) subjects to identify which questions best predicted risk of a red eye event. The score was validated with a prospective study of 75 (25 red eye). An overall risk score was obtained based on the parameter estimates in the final model.

**Results:** Survey questions showed high internal consistency (weighted Kappa >

0.6 for most items), and between and within-subject repeatability (moderate to substantial agreement). Seven questions were most predictive of a red eye event: wearing SCLs 4+ days/week ( $p=0.02$ , 9 points), sleeping overnight in SCLs ( $p=0.007$ , 6 points), previous red eye ( $p<0.001$ , 6 points), living outside the family home ( $p=0.007$ , 3 points), self-pay for SCLs ( $p=0.04$ , 2 points) and lower education level ( $p=0.04$ , -8 to +8 points). Although not statistically significant, age, sex and use of a SCL case (proxy for reusable SCL) were also retained in the model based on previous research. In the validation sample, the final model showed good discrimination between healthy controls and red eye subjects (AUC 0.81). Participants with a red eye scored significantly higher than healthy control subjects (red eyes  $19.2\pm 4.7$ , controls  $14.2\pm 5.0$ ,  $p<0.001$ ).

**Conclusions:** This work describes the first SCL risk assessment score developed to date and showed excellent discrimination between red eye and non-red eye SCL wearers.

**Research funding received:** Unrestricted grant from Alcon Vision Ltd.

**Paper Number:** 21

**Presentation time:** 15:24-15:36

### **How contact lens friendly is an aeroplane cabin environment?**

*Michael Read, Maria Navascues-Cornago, Carole Maldonado-Codina, Philip Morgan*

**Purpose:** Anecdotal reports suggest that dry eye symptoms and contact lens discomfort are increased during air travel. It has been hypothesised that this reduction in ocular comfort may relate to a reduction in environmental humidity, however there is little information in the literature on the environmental conditions within the aircraft cabin. This study investigated the environmental conditions inside the cabins of short-haul (SH) and long-haul (LH) aircraft in flight.

**Method:** A Tempo Disc logger (Blue Maestro Ltd.) monitored environmental conditions (temperature, relative

humidity (RH) and air pressure) during four commercial flights: two SH (<3 hours) and LH (>6 hours). The logger was positioned on a seat-back within the cabin and data were captured every 30 seconds. In addition, control data were logged for a range of environments (e.g. office, home, outdoors).

**Results:** Air pressure (baseline:  $1007 \pm 10$  mmHg) rapidly decreased over a 20-minute period following take-off and then stabilised ( $824$  mmHg  $\pm 23$  mmHg), before increasing during descent to reach normal atmospheric conditions ( $1013$  mmHg  $\pm 12$  mmHg). RH reduced gradually following take-off with lower levels for LH flights (minimum RH 9.6%) than SH flights (minimum RH 18.5%). Cabin temperature was generally stable through flight (mean  $24.0 \pm 1.4$  °C). Control data showed a temperature of  $21 \pm 5$  °C, RH of  $52 \pm 8$  % and air pressure of  $1008 \pm 9$  mmHg.

**Conclusions:** The environment within an aircraft cabin showed substantially lower humidity and pressure than the control environments, with humidity equivalent to the Mojave Desert and air pressure equivalent to an altitude of 2000 metres. These conditions are likely to reduce tear film stability and increase tear film evaporation rate, resulting in a challenging environment for contact lens wearers. Eye care practitioners should be aware of these challenging conditions and counsel their patients accordingly to minimise associated dry eye and vision-related symptoms.

**Research funding received:** None

**Paper Number:** XX

**Presentation time:** 15:36-15:48

**Paper Number:** 23

**Presentation time:** 15:48-16:00

### **Association between soft contact lens decentration and scleral shape.**

*Giancarlo Montani*

**Purpose:** The aim of this study was to assess the association between decentration of soft contact lenses and the scleral shape.

**Method:** This study included 24 REs of habitual spherical (single vision and multifocal) disposable and frequent replacement soft CLs wearers. HVID and anterior segment sagittal heights (ASSHs), for a chord of 15,00mm, were measured using a Fourier transform profilometer and the lowest and highest sagittal heights with their relative direction determinate. With the habitual CLs used fitted the images of anterior eye were acquired in primary gaze and opening the eyelids with a slit lamp and a digital images acquisition system focused on the edge of the lens. The position of the centre of lens in respect to the centre of the cornea on horizontal and vertical axes was objectively determined using the program Image J with the software measurement scale calibrated using the image of a reticule of a CL loupe. Total decentration and its direction was determined also through trigonometric analysis.

End of session

**Results:** On average, most of CLs evaluated were displaced in a temporal–inferior position in respect to the center of the cornea regardless of the kind of lens used (temporal decentration  $0.42\pm 0.36\text{mm}$ , inferior decentration  $0.36\pm 0.31\text{mm}$ ). A significantly strong Pearson's correlation was found comparing the differences between the lowest and highest ASSHs with the total decentration  $r=0,812$  ( $p<0.01$ ) and comparing the ratio between the total diameter of CL used and the HVID with the total decentration  $r=0,858$  ( $p<0.01$ ). A moderate Pearson's correlation was found instead comparing the direction of highest ASSH with the direction of the total decentration  $r=0,589$  ( $p<0.05$ )

**Conclusions:** In conclusion the decentration of common disposable and frequent replacement soft CLs can primarily be attributed to the asymmetry of anterior segment. A lower difference between the total diameter of CLs and the HVID can reduce this effect.

**Research funding received:** N/A