

## Purpose

A key determinant of contact lens success in the marketplace is initial and ongoing comfort. In the past, it has been generally accepted that rigid lenses are less comfortable than soft lenses when worn on a daily wear basis,<sup>1</sup> although once the wearer has adapted to rigid lenses, they are perceived as being as comfortable as soft lenses. For rigid lenses to be commercially successful for continuous wear (CW), it will need to be demonstrated that wearers can rapidly adapt to this modality of lens wear.

## Methods

### Subjects

100 subjects were stratified as follows:

- 25 existing soft lens wearers were fitted with the soft study lens.
- 25 existing rigid lens wearers were fitted with the rigid study lens.
- 25 neophytes were randomly assigned to wear the soft study lens.
- 25 neophytes were randomly assigned to wear the rigid study lens.

### Lenses

Two hyper permeable lenses (Table 1).

### Experimental protocol

Subjects attended for the following visits:

- Lens dispensing.
- After one week of daily wear (to allow for familiarity with lens handling and care).
- On the morning following the first night of overnight lens wear which immediately followed the 'daily wear' visit.
- 2 weeks after commencing CW.
- 1,3,6,9,12 months after commencing CW.

## Methods continued

### Comfort assessment

At each visit, subjective comfort was assessed using an annotated vertical analogue comfort scale (Figure 1),<sup>2</sup> whereby 0 represented 'causes pain' and 100 represented 'excellent' comfort.

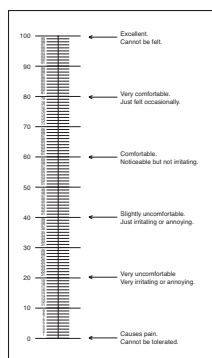


Figure 1: Comfort scales.

### Statistical analysis

Comfort scores were evaluated using a repeated measures analysis of variance whereby study visit was included as a within-subject factor and lens type (soft or rigid) and experience (neophyte or experience) were assessed as within-subject factors.

Parameters	Soft lens	Rigid lens
Name	Focus Night & Day	Z-alpha
Material type	Silicone hydrogel	Siloxanystyrene
Manufacturer	CIBA Vision	Menicon
Dk (barrer)	140 ('Hyper')	163 ('Hyper')
BOZR (mm)	8.4 and 8.6	7.2 to 8.4 (0.05 steps)
Total diameter (mm)	13.8	9.2 and 9.6
Modality	30 days CW	30 days CW
Replacement	30 days	No planned replacement

Table 1: Study lenses.

## Results

Figure 2 shows the comfort response of all subjects, including those who discontinued at various stages during the study.

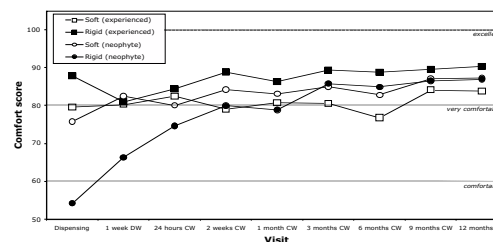


Figure 2: Comfort scores for all subjects. Typical standard deviation = 14.4.

Figure 3 is the same construction as Figure 2 except that the data for discontinued subjects are excluded from this graph. It is evident that there is little difference in the pattern of comfort change over the study between these two figures.

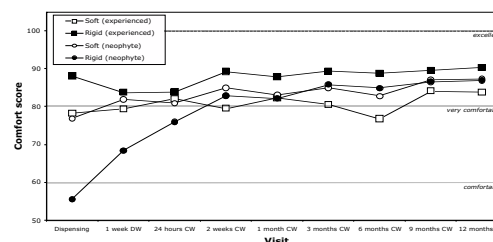
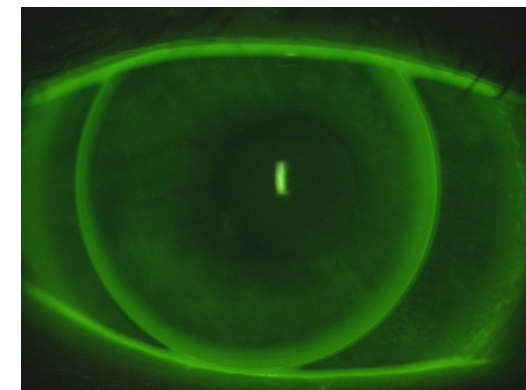


Figure 3: Comfort scores for completing subjects only. Typical standard deviation = 14.4.

The statistical analysis demonstrated a significant visit x lens x experience interaction ( $F = 4.7$ ,  $p = 0.0004$ ). Inspection of Figures 2 and 3 confirms that there was an increase in comfort scores for the neophyte rigid lens group such that there was little difference in comfort between the four clinical groups af-



ter one night of sleeping in lenses (which followed one week of daily wear) and at subsequent visits.

There were no significant differences for the soft lens wearers, either between visits, or between the neophyte and experienced groups. Also, the comfort scores for the experienced rigid lens group were similar to those for the two soft lens groups.

## Conclusions

Neophytes who wish to wear hyper transmissible rigid lenses on a continuous wear basis can achieve levels of comfort equivalent to hyper transmissible soft lenses after only eight days if they follow the type of wearing schedule described in this study (one week of daily wear followed by continuous wear).

## References

1. Fonn D, Gauthier CA, Pritchard N. Patient preferences and comparative ocular responses to rigid and soft contact lenses. *Optom Vis Sci* 1995; 72: 857-863.
2. Morgan PB and Efron N. Comparative clinical performance of two silicone hydrogel contact lenses for continuous wear. *Clin Exp Optom* 2002; 85: 183-192.