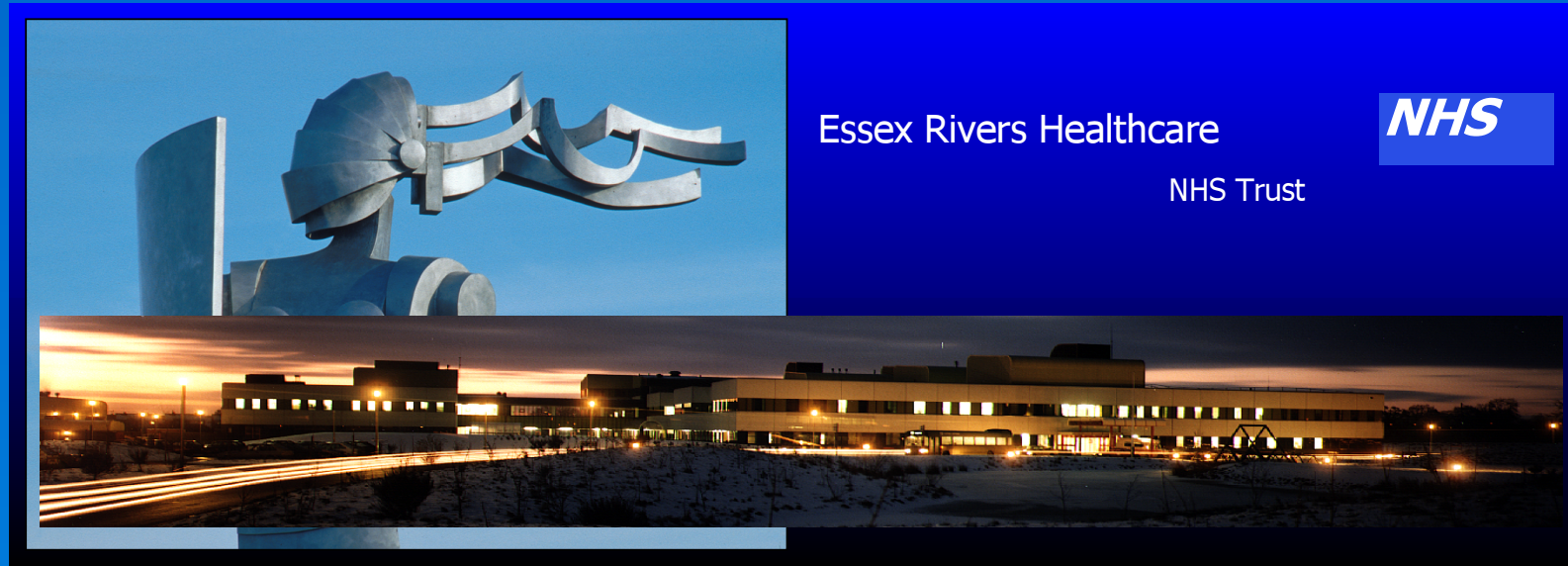


# Applanation tonometry in silicone hydrogel contact lens wearers

1542/B353



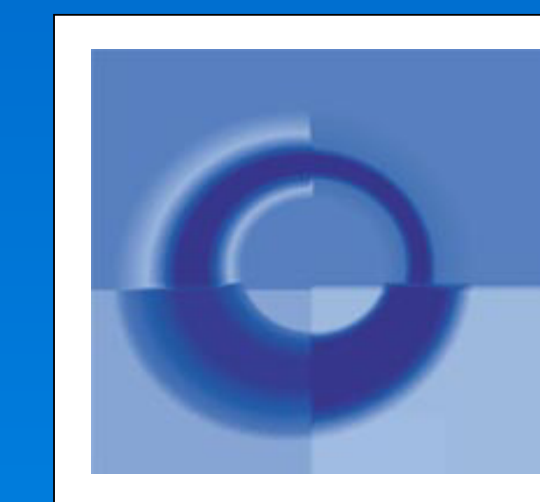
R.J.Allen<sup>1</sup>, D.De Wit<sup>1,2</sup>, G.M.Saleh<sup>2,3</sup>

<sup>1</sup>Essex County Hospital, Colchester

<sup>2</sup>Institute of Ophthalmology, London

<sup>3</sup>Princess Royal University Hospital, Bromley

Allen CR:None, De Wit CR:None, Saleh CR:None



## Introduction

Previous studies investigating IOP measurement through conventional soft (hydrogel) therapeutic contact lenses, found that accurate IOP measurements can be obtained in eyes with both normal and abnormal anterior segments<sup>1,2,3</sup>. IOP measurement through soft contact lenses can be affected by the water content and centre thickness of the lens (which is influenced by both lens design and refractive power of the lens)<sup>4,5</sup>.

Further, if high molecular weight fluorescein is used for the applanation tonometry, the chance of permanently staining the lens is reduced.

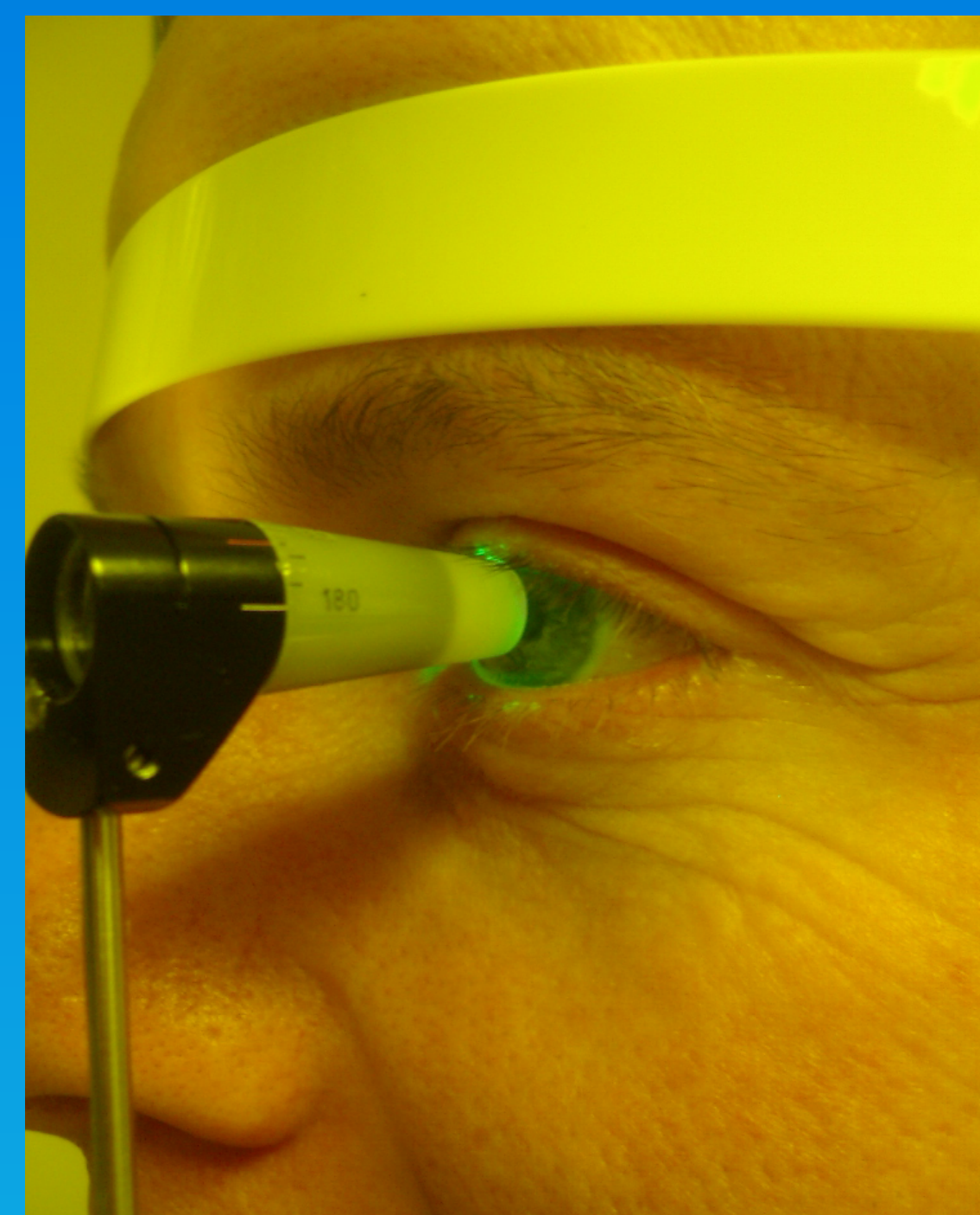
Silicone hydrogel contact lenses are now being used as therapeutic contact lenses due to their high oxygen permeability<sup>6,7</sup>.

The purpose of this study is to investigate if IOP can be accurately measured in a subject wearing a silicone hydrogel contact lens.

## Method

The IOP of 20 eyes from 10 volunteers with no ocular pathology (age range 21-48) was measured, firstly without a contact lens present on the eye. The IOP measurement was then repeated with a -0.50DS Bausch and Lomb Purevision silicone hydrogel contact lens *in situ*. This lens power is commonly used as a therapeutic lens.

Goldmann tonometry, proxymetacaine and fluorescein mixed minims, utilising the same tonometer and slit lamp and operator on every occasion, was used as standard.



## Results

The IOP was measured in twenty eyes of ten volunteers with no ocular pathology (age range 21-48). The mean difference ( $\pm$ SD) found between IOP measurement with (mean  $15.55 \pm 1.70$ mmHg) and without (mean  $16.05 \pm 1.90$ mmHg) contact lens was found to be  $-0.5 \pm 0.889$ mmHg.

The correlation coefficient was 0.89.

No significant statistical difference was found between the two groups with paired t-test ( $p=0.19$ ).

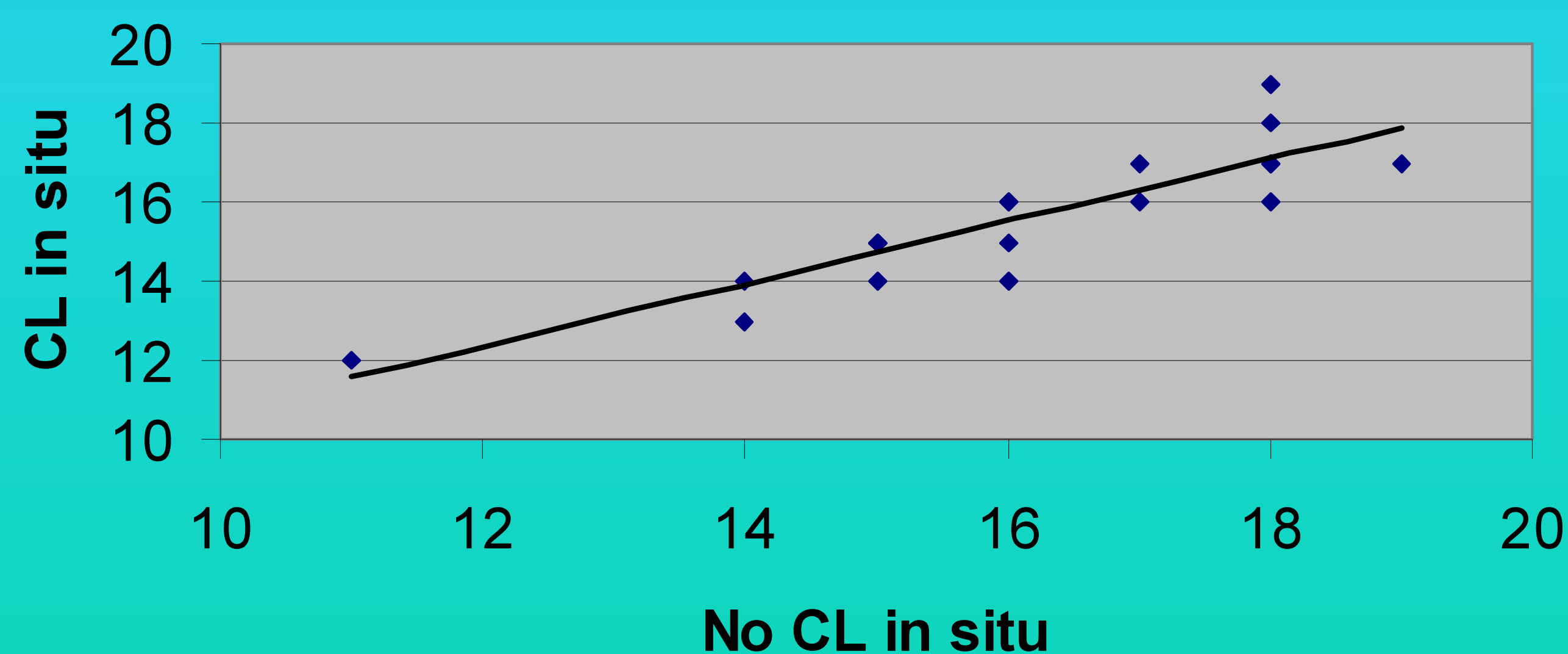
## Discussion

Taking into account previously published values for the intra-observer variability of Goldmann applanation tonometry of ( $\pm 4$ mmHg)<sup>8</sup>, the difference in IOP measured with a silicone hydrogel contact lens *in situ* can be considered to be clinically insignificant.

## Conclusion

Accurate measurement of IOP can be achieved through a silicone hydrogel contact lens

IOP with Vs without contact lens in situ



### References:

1. The effects of therapeutic contact lenses on intraocular pressure measurement. Scibilia GD, Ehlers WH, Donshik PC. *CLAO J.* 1996 Oct;22(4):262-5.
2. Accurate intraocular pressure measurement in contact lens wearers with normal pressures. Lim L, Ng TP, Tan DT. *CLAO J.* 1997 Apr;23(2):130-3.
3. Intraocular pressure measurement with the Tono-Pen through soft contact lenses. Panek WC, Boothe WA, Lee DA, Zemplyni E, Pettit. *Am J Ophthalmol.* 1990 Jan 15;109(1):62-5.
4. Intraocular pressure by noncontact tonometry with and without soft contact lenses. Insler MS, Robbins RG. *Arch Ophthalmol* 1987 Oct;105(10):1358-9.
5. Noncontact tonometry through soft contact lenses. McMonnies CW. *Am J Optom Physiol Opt.* 1986 Dec;63(12):948-51.
6. Therapeutic use of Bausch & Lomb PureVision contact lenses. Lim L, Tan DT, Chan WK. *CLAO J.* 2001 Oct;27(4):179-85.
7. Retrospective case series of therapeutic applications of a lotrafilcon A silicone hydrogel soft contact lens. Montero J, Sparholt J, Mely R. *Eye Contact Lens.* 2003 Jan;29(1 Suppl):S54-6; discussion S57-9, S192-4.
8. Measurement of intraocular pressure: a study of reproducibility. Phelps CD, Phelps GK. *Graefes Arch. Clin. Exp. Ophthalmol.* 198, 39-43.