



HVID Measurements Utilizing Various Instrumentation

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Purpose

- Horizontal Visible Iris Diameter (HVID) and sagittal depth measurements are important when fitting specialty contact lenses as they assist with initial lens selection and can improve comfort and fit.
- The purpose of this study was to determine HVID measurements provided by different instruments utilized in clinical practice.

Methods

- This study was approved by the IRB at the Illinois College of Optometry
- Exclusion criteria:
 - significant ocular pathology
 - ocular surgery
 - contact lens wear within 8 hours
- Subjects had 3 consecutive HVID measurements taken on the by each of the following instruments:
 - Pentacam (Oculus, Optikgeräte, Germany)
 - Atlas topographer (Carl Zeiss Inc., White Plains, NY)
 - Eaglet Eye Surface Profiler (Eaglet Eye b.v., The Netherlands)
 - Medmont topographer (Nidek Inc., San Jose, CA)
 - 3in1Ruler (SynergEyes, Carlsbad, CA)
- Descriptive statistics and Bland-Altman statistics are presented.

Results

Overall Demographics

30 subjects (60 eyes)

18 male (60%)
 12 female (40%)

Mean age: 34.6 ± 11.7
 (Range 23-68 years)

Table 1: Mean HVID Measurements by Various Instruments

Instrument	OD HVID (mean, SD)	OS HVID (mean, SD)
Pentacam	11.8 ± 0.47	11.9 ± 0.37
Eaglet ESP	12.2 ± 0.35	12.1 ± 0.35
Medmont	11.7 ± 0.29	11.8 ± 0.32
Atlas	12.4 ± 0.39	12.4 ± 0.38
3in1 Ruler	12.1 ± 0.32	12.1 ± 0.34

- Assessment of the repeatability of instruments and comparison of HVID measurements between instruments was completed using Bland-Altman statistics. The results can be viewed in Table 2.

Table 2: Bland-Altman Analysis of HVID Measurements Between Instruments

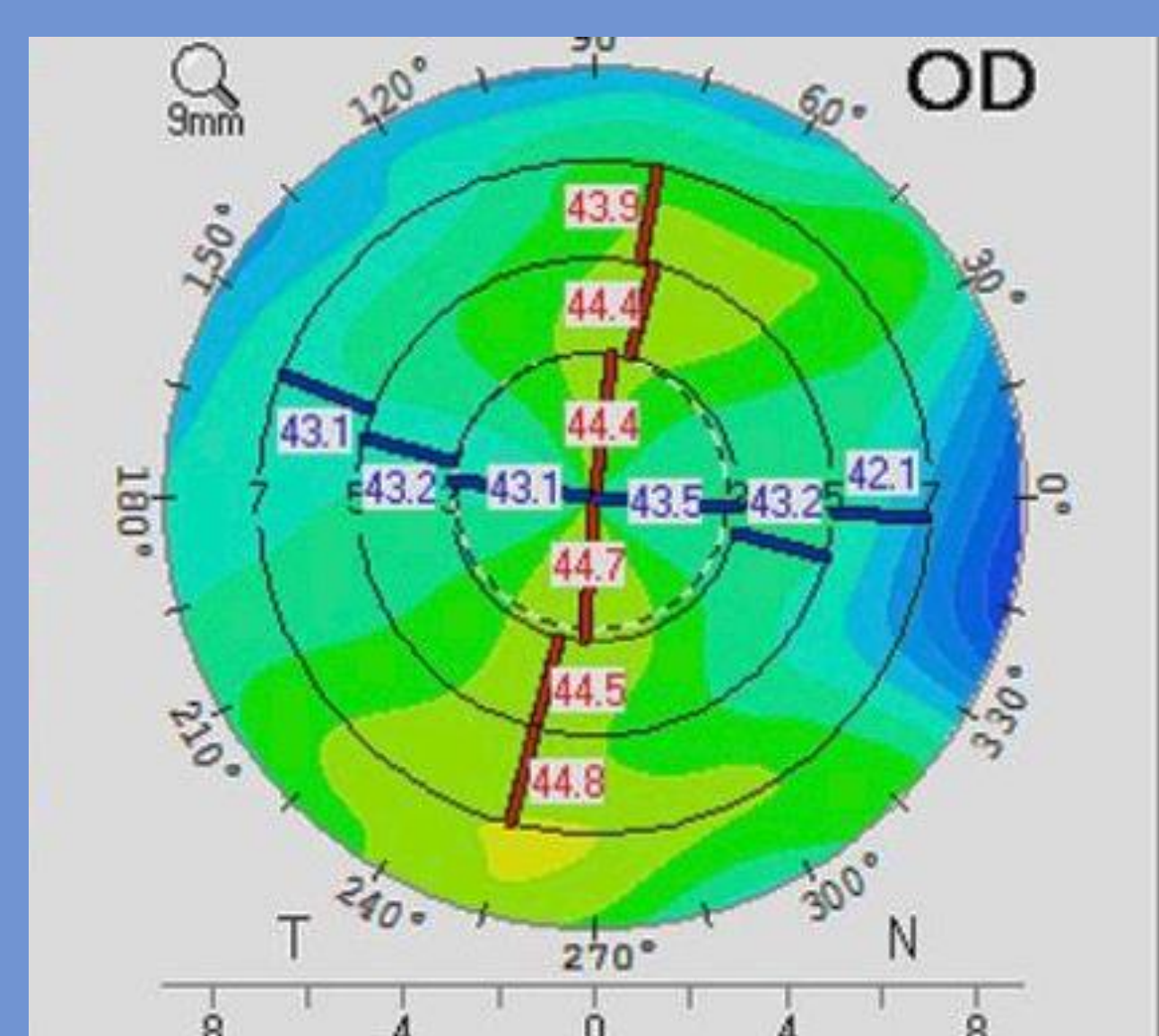
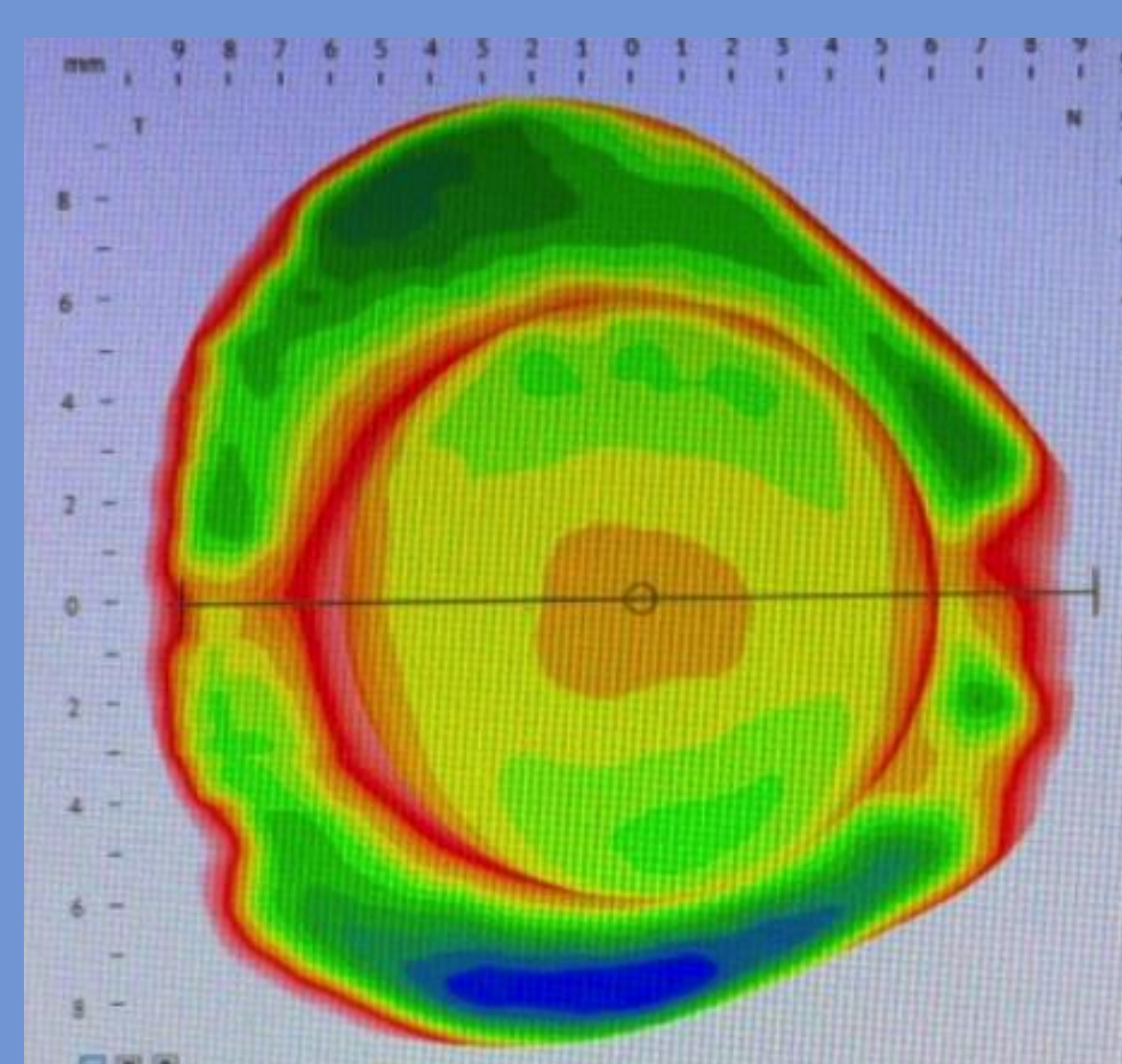
Instruments	p value
Ruler and ESP	p=0.106
Ruler and Pentacam	p=0.001
ESP and Pentacam	p<0.0005
Ruler and Medmont	p<0.0005
ESP and Medmont	p<0.0005
Pentacam and Medmont	p=0.155

Discussion

- The size of the cornea directly impacts sagittal depth of the cornea and therefore is an important measurement for initial contact lens selection.
- Many instruments are available to practitioners to assist with contact lens fitting; however, some practitioners are not able to make the financial commitment.
- A dry surface or irregular cornea may affect acquisition quality and thereby can affect measurements.

Conclusions

- There was no significant difference between the 3in1 Ruler and ESP or between the Pentacam and Medmont.
- There were significant differences between the 3in1 Ruler and Pentacam, the ESP and Pentacam, the 3in1 Ruler and Medmont, and ESP and Medmont.
- Accurate and similar HVID measurements were obtained with the 3in1 ruler as compared to a more technologically advanced devices which may be beneficial for many when fitting specialty contact lenses.
- Future study is needed to include more subjects, with and without pathology.



Disclosures:

Harthan: Allergan, Bausch + Lomb, Contamac, Essilor, Euclid, International Keratoconus Academy, Kala Pharmaceuticals, Metro Optics, SynergEyes, Tangible Science
 Skoog: None
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