

Pentacam in refractive interventions

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Pentacam

Cornea

- ▶ Screening for Ectasia
- ▶ Refractive Surgery planning
- ▶ Corneal densitometry
- ▶ Contact Lens Fitting

Lens surgery

- ▶ Premium IOL Selection
- ▶ IOL Power Calculation
- ▶ Cataract Screening
- ▶ Phakic IOL



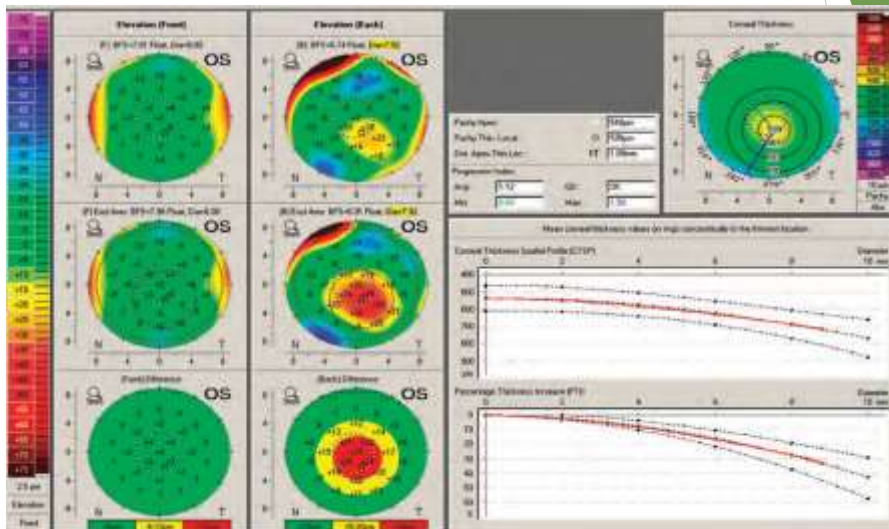
Cornea

Screening for ectasia & refractive surgery planing

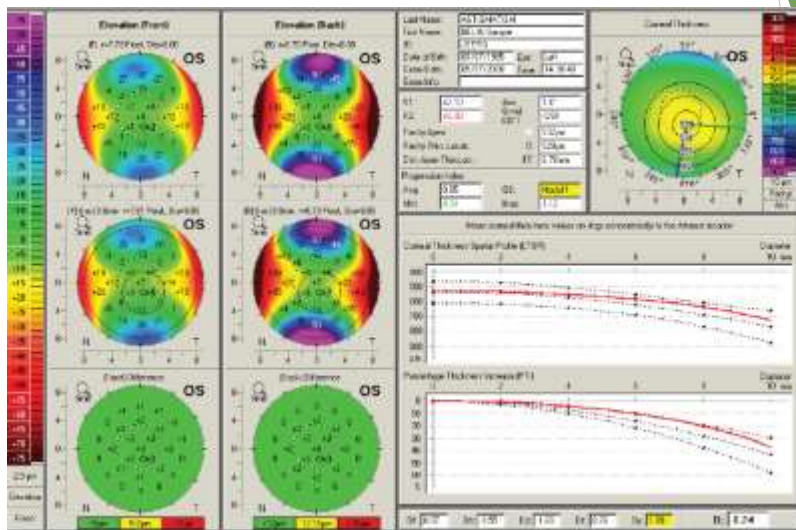


Belin/Ambrosio Enhanced Ectasia Report

Belin/Ambrosio Enhanced Ectasia Report I

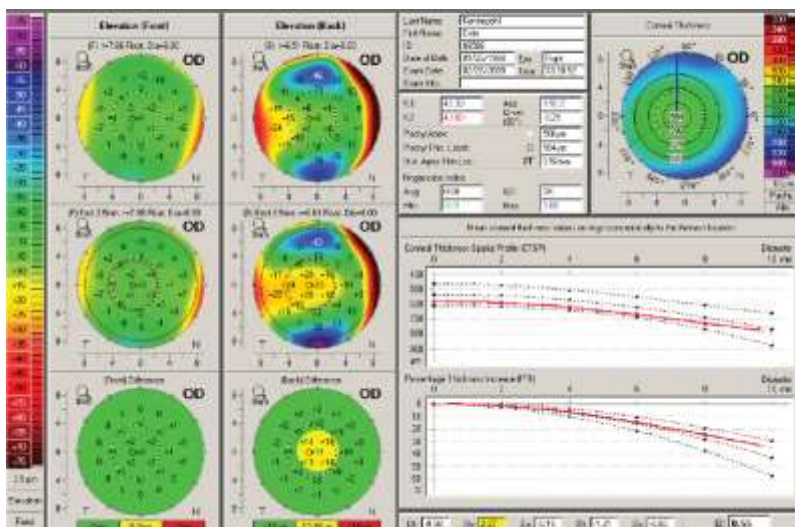


Belin/Ambrosio Enhanced Ectasia Report II

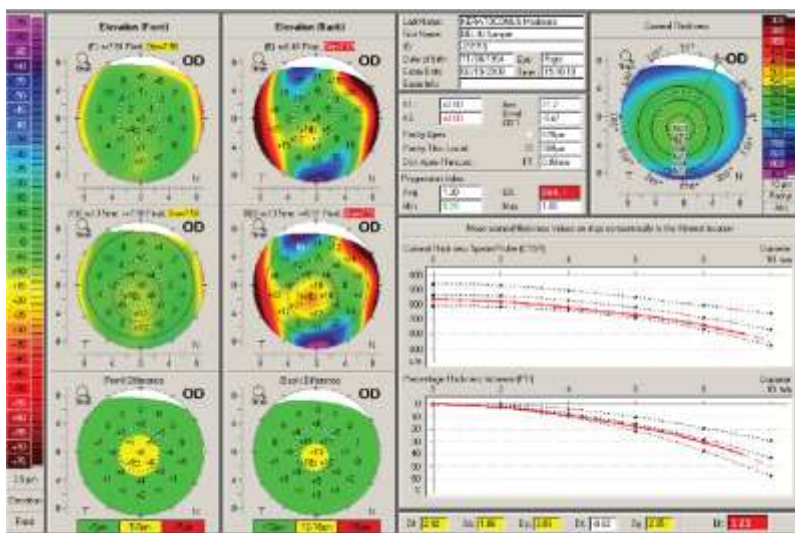


- Df (front) Db (back) Dp (pach. Prog.) Dt (thinnest point) Da (thinnest displacement)

Belin/Ambrosio Enhanced Ectasia Report II

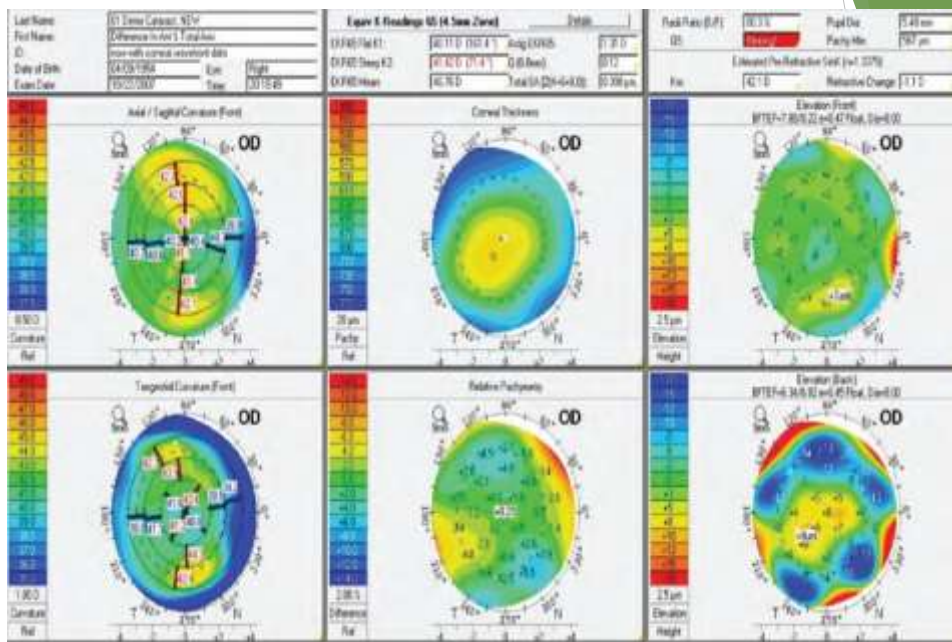


Belin/Ambrosio Enhanced Ectasia Report II

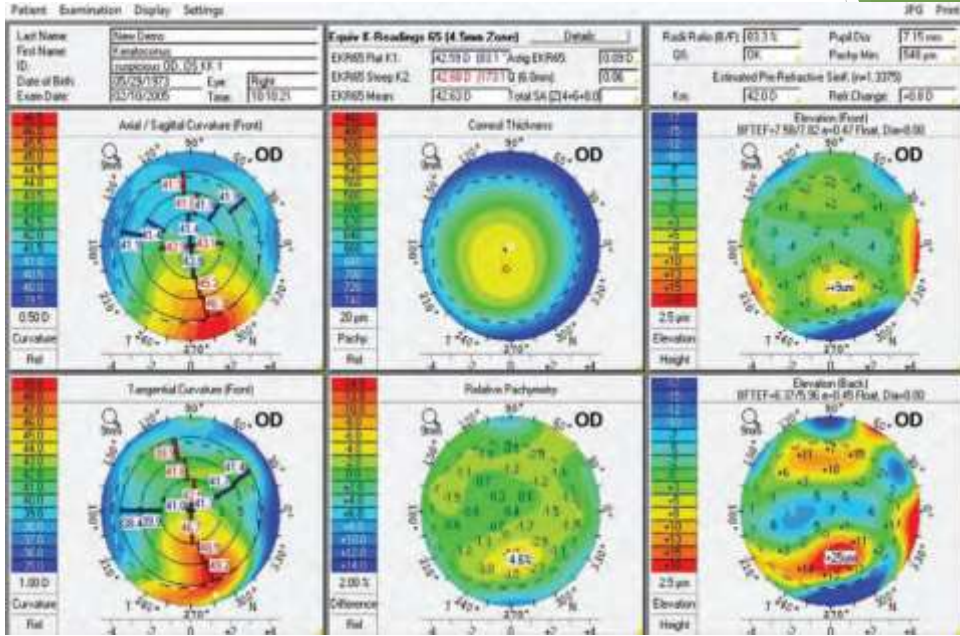


Holladay report

Holladay report



Holladay report



CORNEAL DENSITOMETRY

Corneal densitometry

- ▶ Infectious keratitis
- ▶ Dystrophy
- ▶ Keratoconus
- ▶ Post lasik

Corneal densitometry

- ▶ Gray scale unit (GSU)
- ▶ 0 transparent
- ▶ 100 minimum transparency

From: Normative Values for Corneal Densitometry Analysis by Scheimpflug Optical Assessment
 Invest. Ophthalmol. Vis. Sci. 2014;55(1):162-168. doi:10.1167/iov.13-13236

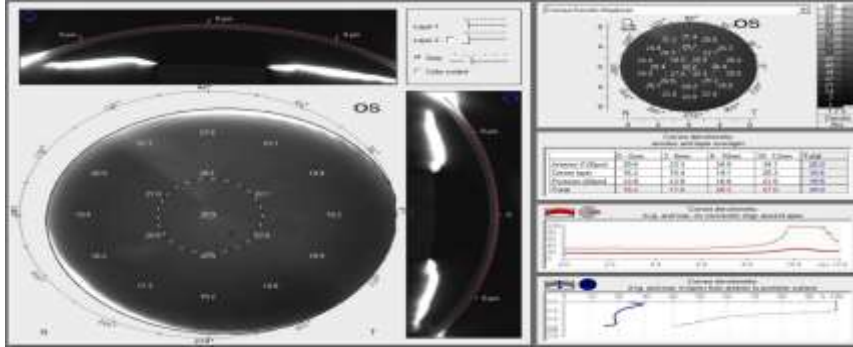


Figure Legend:
 Screen data output of the Scheimpflug optical densitometry assessment.

Date of download: 12/29/2017

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From: Normative Values for Corneal Densitometry Analysis by Scheimpflug Optical Assessment
 Invest. Ophthalmol. Vis. Sci. 2014;55(1):162-168. doi:10.1167/iov.13-13236

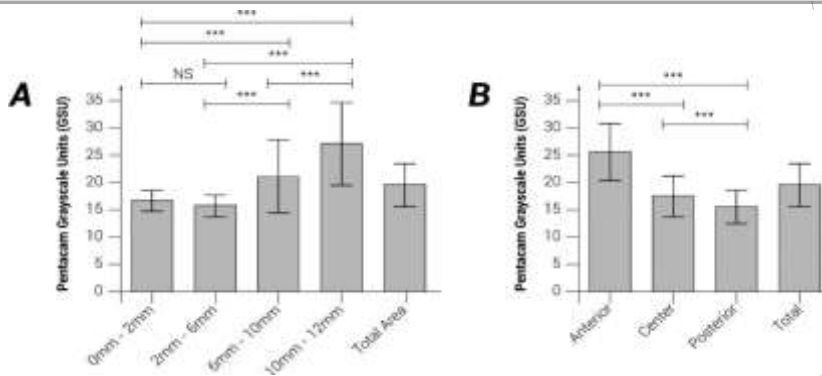
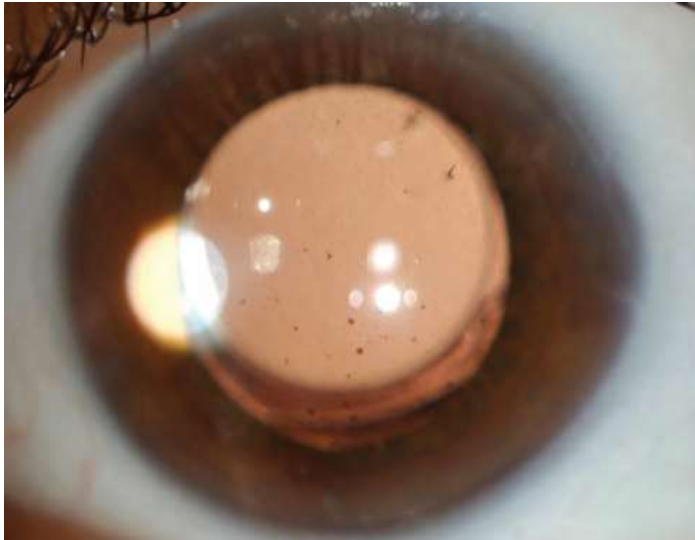


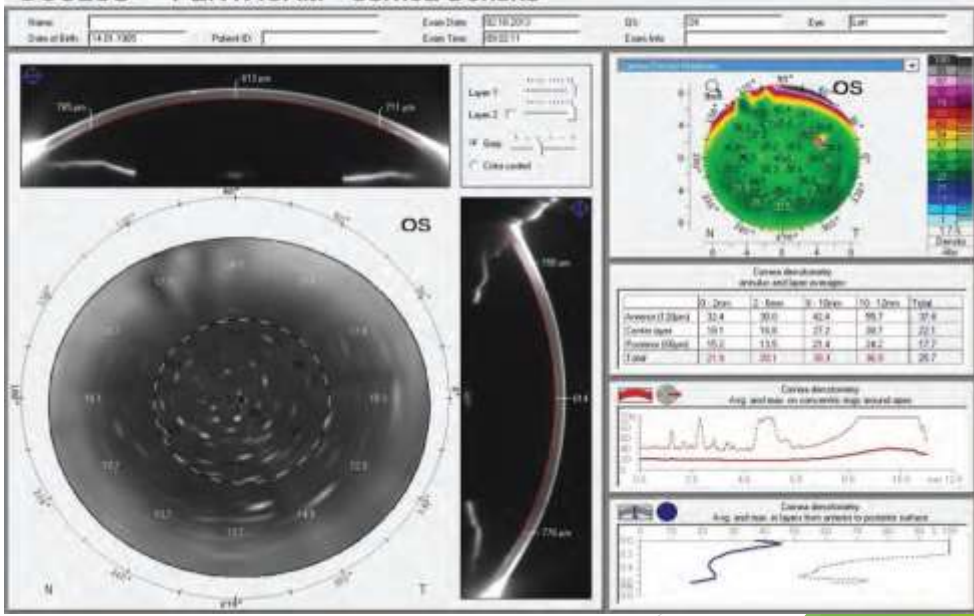
Figure Legend:
 Corneal densitometry measurements subdivided by (A) surface area and (B) corneal layer; *** refers to a statistical significance of $P < 0.001$.

Date of download: 12/29/2017

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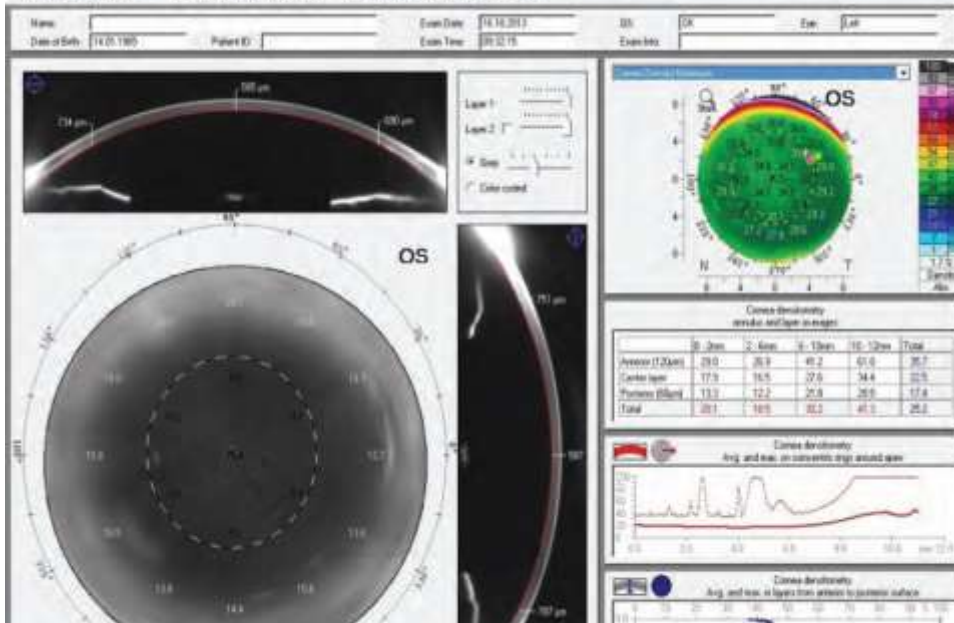


KP'S
OCULUS - PENTACAM Cornea Densito



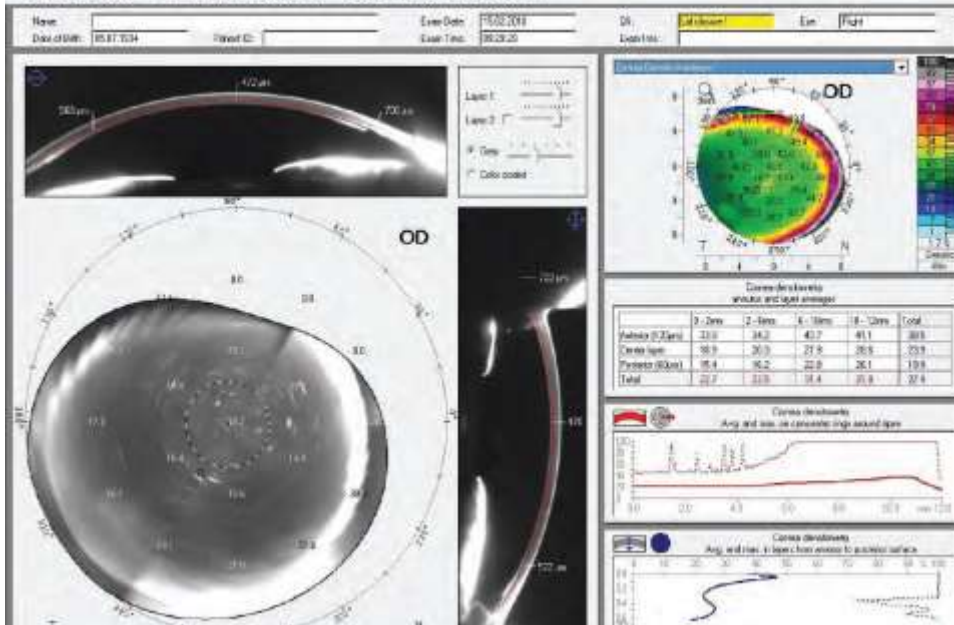
KP'S

OCULUS - PENTACAM Cornea Densito

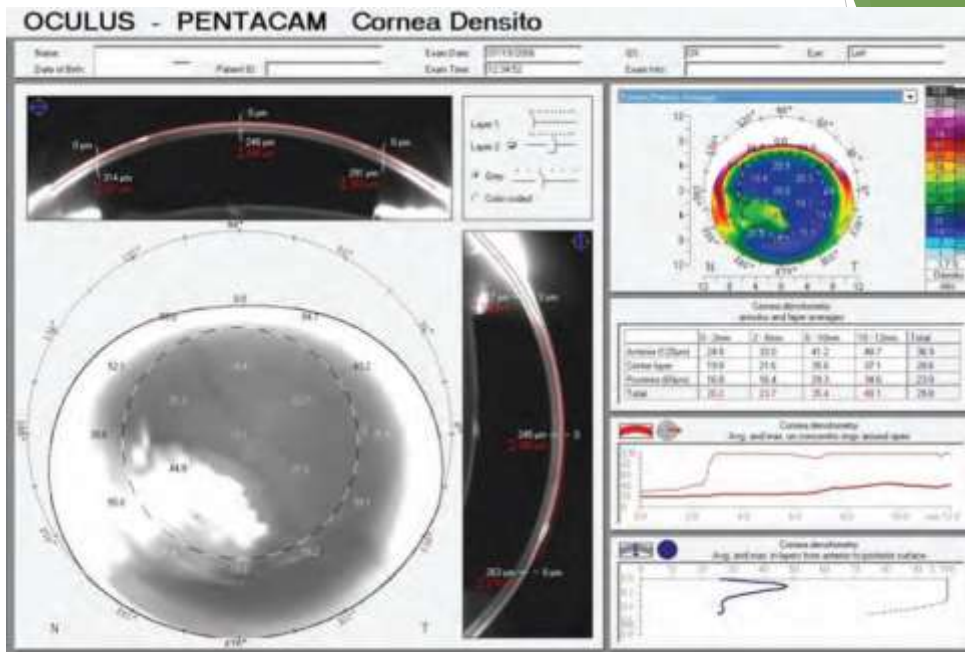


DSAEK

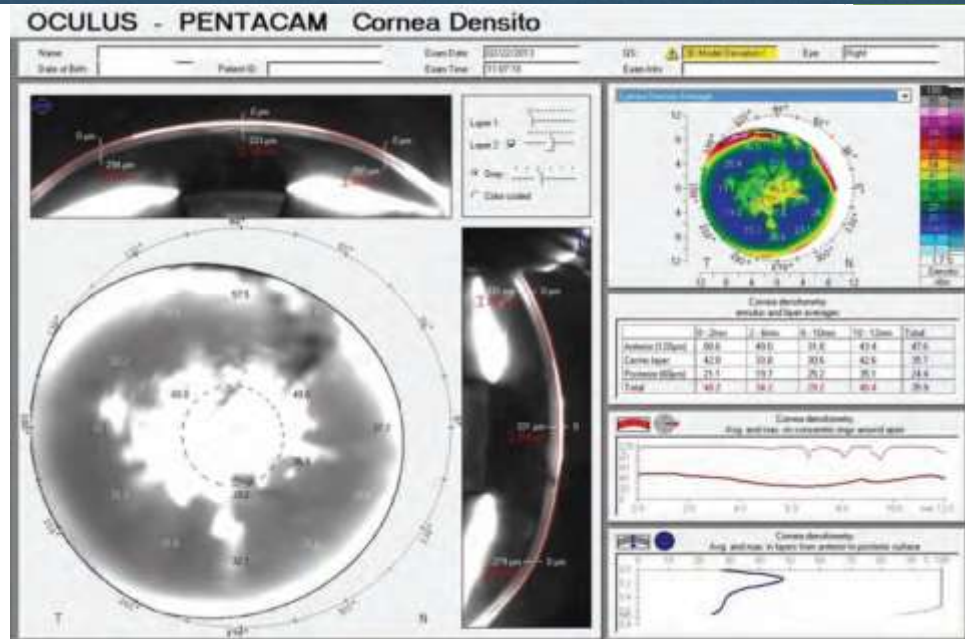
OCULUS - PENTACAM Cornea Densito



CORNEAL SCAR



CORNEAL SCAR



Pentacam

Cornea

- ▶ Screening for Ectasia
- ▶ Refractive Surgery planning
- ▶ Corneal densitometry
- ▶ Contact Lens Fitting

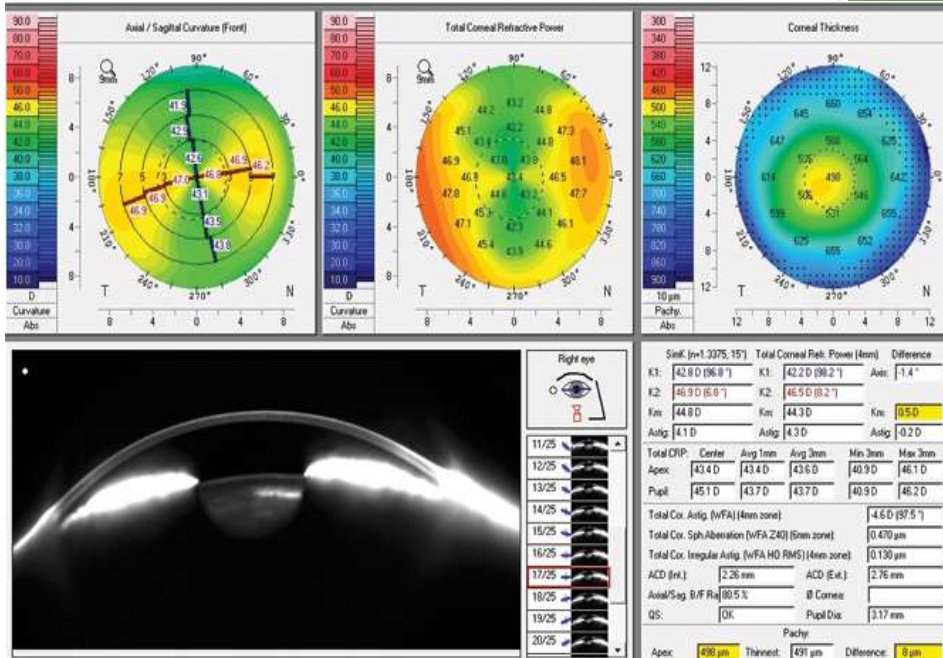
Lens surgery

- ▶ Premium IOL Selection
- ▶ IOL Power Calculation
- ▶ Cataract Screening
- ▶ Phakic IOL

LENS SURGERY

CATARACT PRE-OP DISPLAY

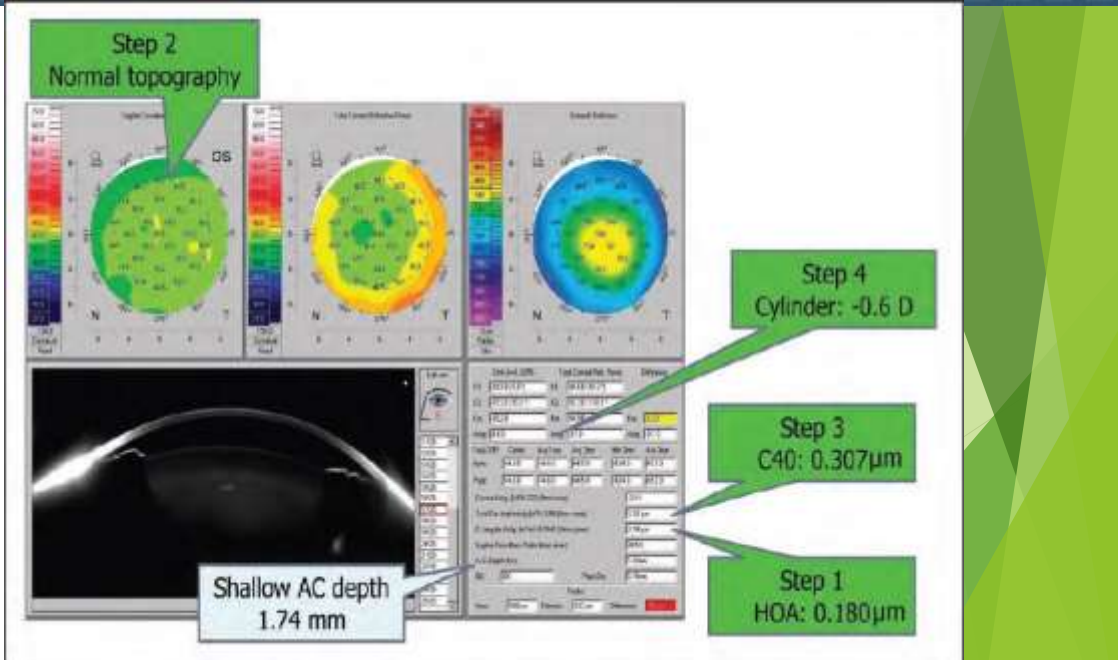
CATARACT PRE-OP DISPLAY



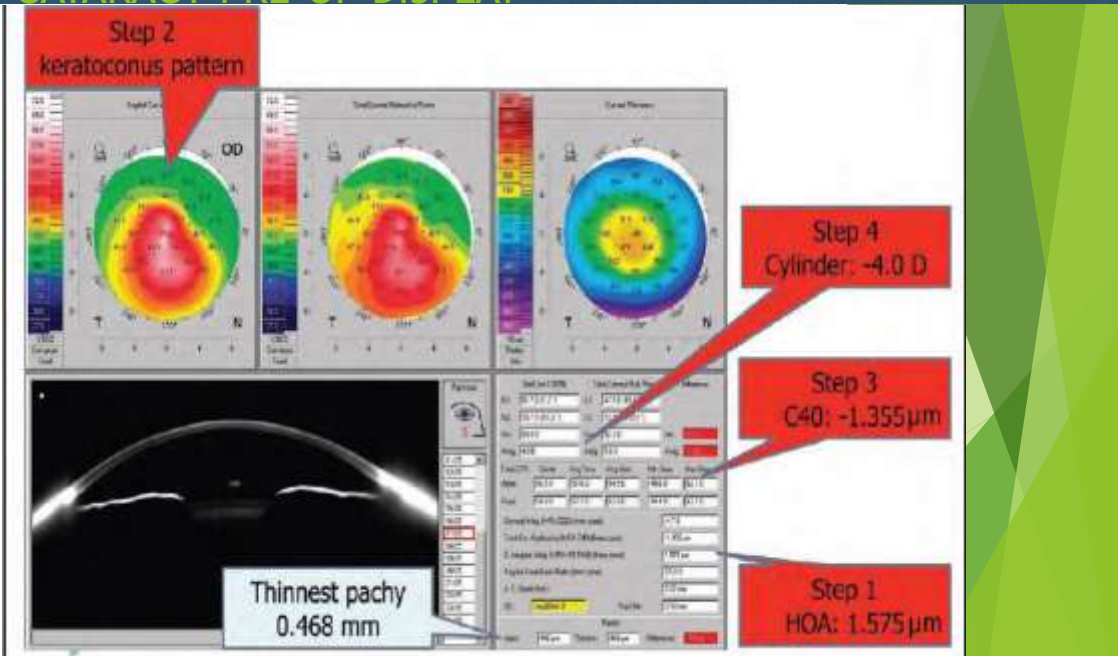
CATARACT PRE-OP DISPLAY

<p>Step 1: Evaluation of corneal irregular astigmatism</p>	<p>Check the irregular astigmatism with the refractive power map qualitatively, and with total HOA quantitatively. The current cut-off value of less than 0.3 μm (RMS, 4mm) for multifocal IOLs, and more than 0.5 μm (RMS, 4mm) for the informed consent about significant irregular astigmatism is important.</p>
<p>Step 2: Detection of abnormal corneal shape</p>	<p>Check the abnormal corneal shape with the axial power map qualitatively, and with sagittal front-back ratio quantitatively. Determine whether to select the routine method or special method for IOL power calculation.</p>
<p>Step 3: Evaluation of corneal spherical aberration</p>	<p>Check the corneal spherical aberration. The tentative cut-off value of 0.1 μm (RMS, 6mm) or higher for aspherical IOL and less than 0.1 μm (RMS, 6mm) for spherical IOL.</p>
<p>Step 4: Evaluation of corneal cylinder</p>	<p>Compare the magnitude and axis of cylinder between K readings and wavefront. Consider surgical correction of regular astigmatism depending on the magnitude and axis.</p>

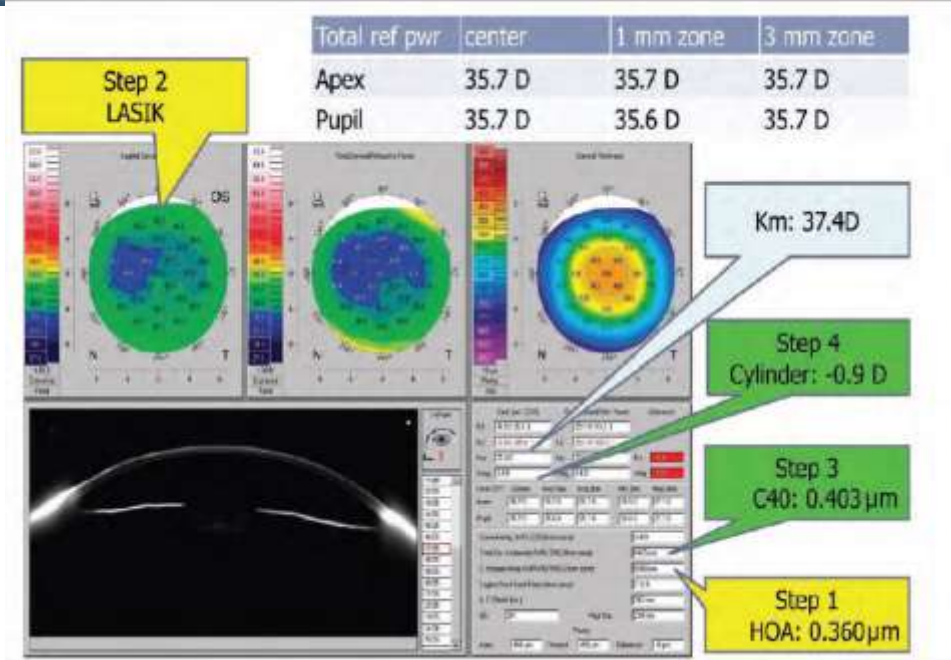
CATARACT PRE-OP DISPLAY



CATARACT PRE-OP DISPLAY



CATARACT PRE-OP DISPLAY



LENS SURGERY

CORNEAL POWER DISTRIBUTION DISPLAY

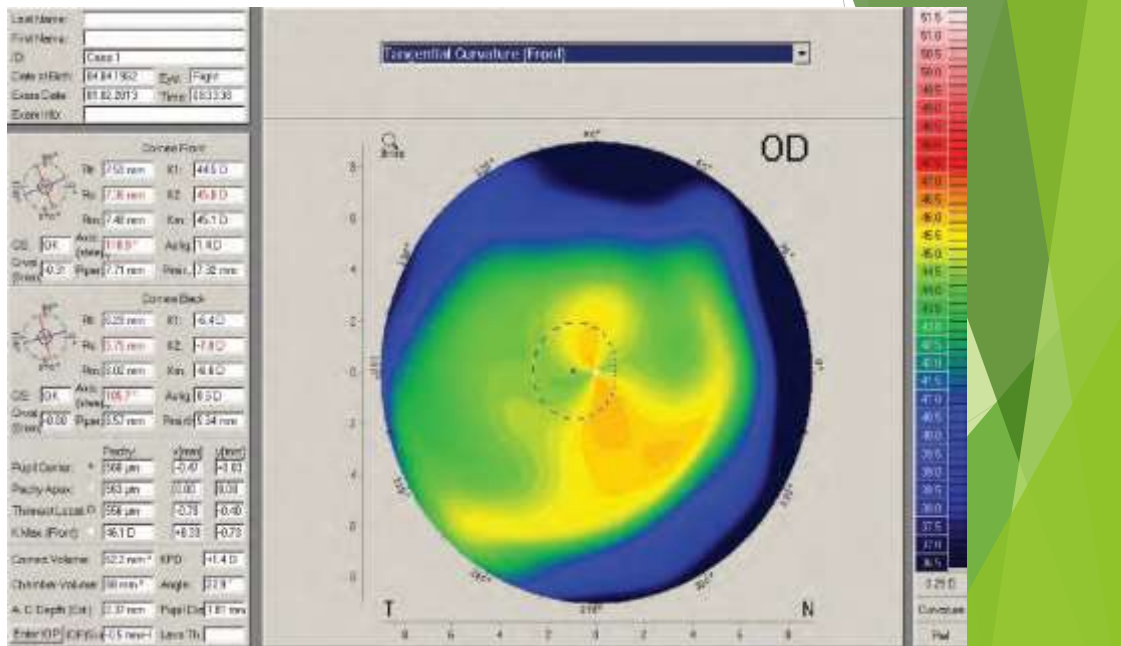
CORNEAL POWER DISTRIBUTION DISPLAY

- ▶ Total corneal refractive power
- ▶ Astigmatism measurement
 - ▶ Toric IOL calculation

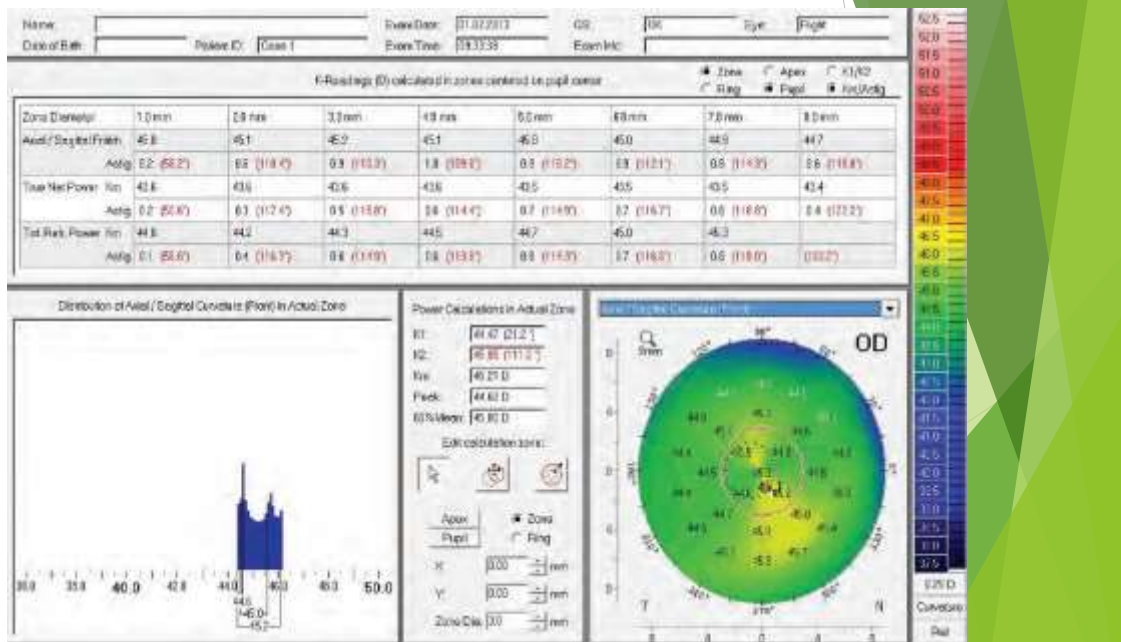
Optimizing Toric IOL Implantation With the Pentacam

- ▶ The power and axis of posterior corneal astigmatism influence the total power of the cornea
- ▶ Negative with-the-rule cylinder (WTR)
- ▶ Toric IOL implantation (AXIAL MAP)
 - ▶ WTR cylinder are overcorrected
 - ▶ ATR cylinder are under corrected.

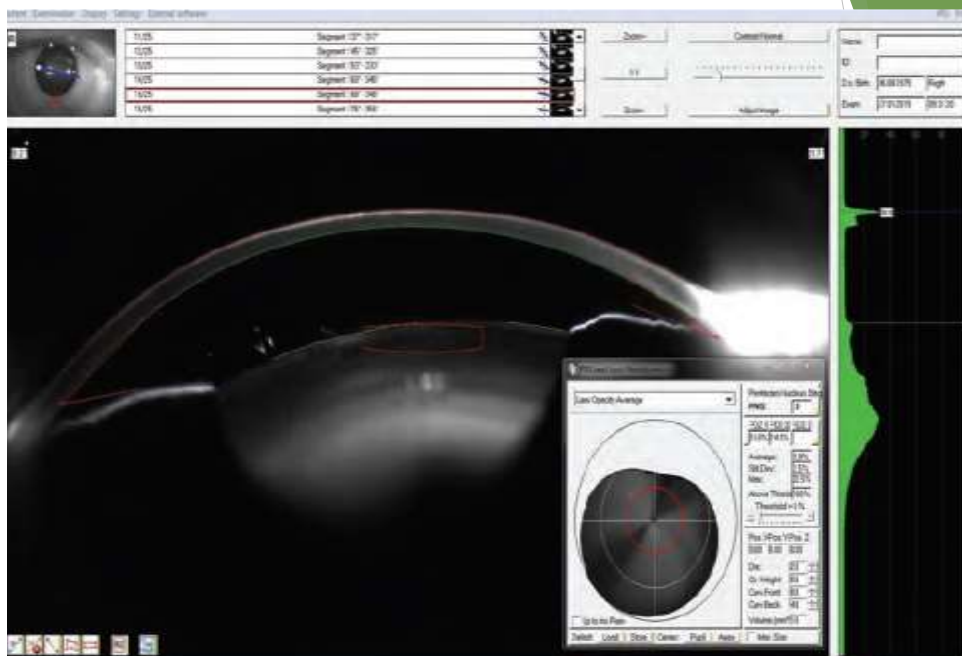
CORNEAL POWER DISTRIBUTION DISPLAY



CORNEAL POWER DISTRIBUTION DISPLAY



PENTACAM NUCLEUS STAGING (PNS)



LENS SURGERY

3D pIOL simulation & aging prediction

3D pIOL simulation & aging prediction

OCULUS - PENTACAM

PIOL Settings
 Material: Contact
 MUSE: A-Minar ToricSCL
 Power: 15.1859/02.58 0.7

Sub. Refract. Diameter (mm)
 Sub: 7.00
 Dia: 7.00
 Dia: 7.00
 Dia: 7.00

Calc. PIOL Power
 Calc. PIOL Power: 14.00
 Spm: 14.00
 Spm: 14.00
 Spm: 14.00

Ageing Prediction
 Act. Age: 22 years
 Pred. Age: 40
 Start Age: []

Left Eye
 Pre-Refraction: []
 ID: []
 Date of Birth: 11/08/1988 Eye: Right
 Expiry Date: 07/11/2027 Date: 09/26/22

PIOL List
 17/25 Segment 183° - 3°
 18/25 Segment 183° - 10°
 19/25 Segment 183° - 18°
 20/25 Segment 183° - 26°
 21/25 Segment 183° - 33°
 22/25 Segment 183° - 41°
 23/25 Segment 183° - 49°
 24/25 Segment 183° - 56°
 25/25 Segment 183° - 64°

PIOL Lens
 OD: []
 OS: []

PIOL Endothelium
 OD: []
 OS: []

Minimum Clearances from PIOL Optic and Haptic
 Endothelium: 0.96 mm (Optic) / 0.52 mm (Haptic)
 Iris: -0.27 mm / -0.25 mm
 Cryst. Lens: 1.00 mm

3D Piol simulation & aging prediction

OpHtec, Anikan Myopia 5x5.5 (284000) v1.15 (beta)

Right eye
 PIOL 0°
 PIOL 90°

PIOL List
 17/25 Segment 183° - 3°
 18/25 Segment 183° - 10°
 19/25 Segment 183° - 18°
 20/25 Segment 183° - 26°
 21/25 Segment 183° - 33°
 22/25 Segment 183° - 41°
 23/25 Segment 183° - 49°
 24/25 Segment 183° - 56°
 25/25 Segment 183° - 64°

Ageing Prediction
 Act. Age: 40 years
 Pred. Age: 60
 Reset Age

Minimum Clearances from PIOL Optic and Haptic
 Endothelium: 0.96 mm (Optic) / 0.52 mm (Haptic)
 Iris: -0.27 mm / -0.25 mm
 Cryst. Lens: 1.00 mm

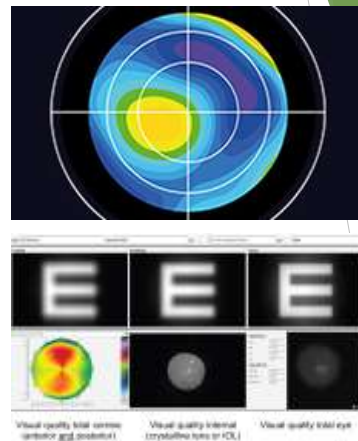
Pentacam® AXL Wave

5 Parameters
Combined for
the First Time



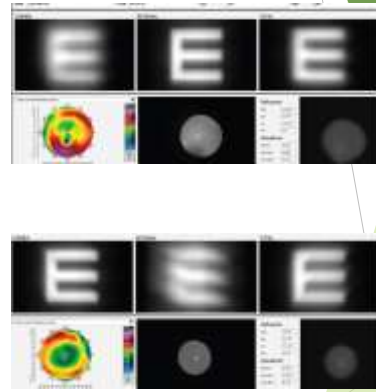
Wavefront aberrometry:

- ▶ Wavefront Aberrometry of the Entire Eye
- ▶ Low and high order aberrations of the whole eye are measured using Hartman-Shack technology.
- ▶ Internal and total corneal wavefront aberrometry is also displayed for detailed crystalline lens or IOL assessment.



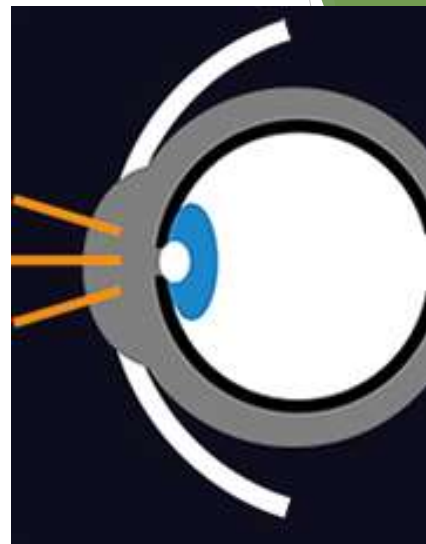
Wavefront aberrometry:

- ▶ useful to understand whether the visual disturbances come from the cornea or the lens
- ▶ Other aberrometers can do a similar task, but they are based on Placido-disc technology, which do not include posterior corneal measurements into the internal visual quality.



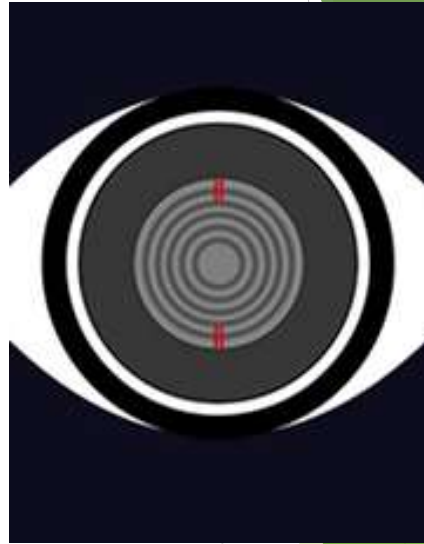
Objective Refraction

- ▶ Measured based on wavefront aberrometry.
- ▶ It uses two different pupil diameters (mesopic and scotopic), which is required when implanting a multifocal IOL or performing laser refractive surgery.



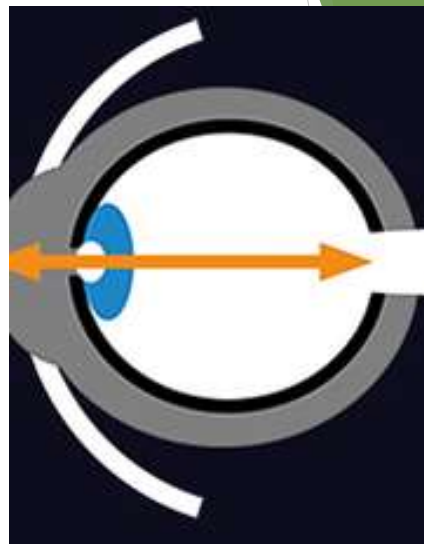
Retroillumination

- ▶ Pre-op assessment of crystalline lens opacities (non-dilated)
- ▶ Post-op control of the IOL position and inclination.



Optical Biometry

- ▶ Contact-free axial length measurements with coherence interferometry in proven precision.
- ▶ Comparable to IOL master





THANK YOU

