Interpreting the New v.3.0 OU Report

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Patient Information — Includes ethnic heritage. Data is compared to the selected ethnic-specific normative database.
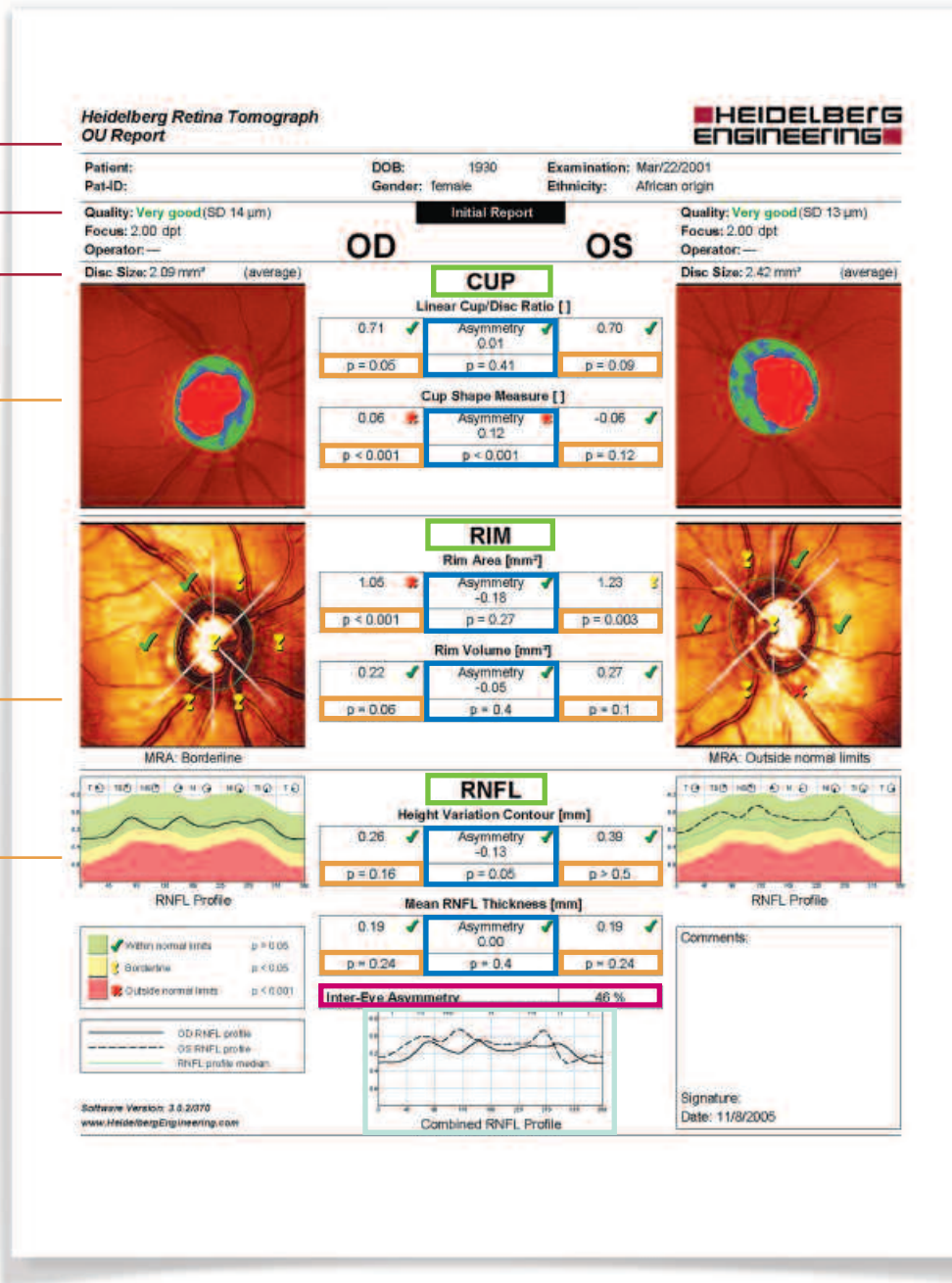
Quality — Clear identification from "excellent" to "very poor." Scores below 30 represent good-quality images.

Optic Disc Size — In addition to measured size, discs are identified as "small," "average," or "large."

CUP — Topography image with cup in red and neuroretinal rim in blue and green. Provides quick visual assessment of cup-to-disc ratio.

RIM — Moorfields Regression Analysis (MRA) identifies sectors with rim damage. Green checks (✔) indicate normal results, yellow exclamation points (❔) indicate borderline, and red X's (✖) indicate outside normal limits. Temporal inferior and superior sectors are most sensitive for detecting early damage.

RNFL Profile Graph — Displays the height values at the optic disc margin going around the optic disc from the temporal side, to superior, nasal, inferior, and back to temporal (TSNIT). The green shaded area is the normal range, yellow is border-line, and the red zone indicates outside normal limits compared to the selected ethnic-specific normative database.

Heidelberg Retina Tomograph OU Report

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| Patient: | DOB: 1930 | Examination: Mar/22/2001 |
| Pat-ID: | Gender: female | Ethnicity: African origin |

Quality: Very good (SD 14 μm)
Focus: 2.00 dpt
Operator: —

Initial Report

Quality: Very good (SD 13 μm)
Focus: 2.00 dpt
Operator: —

OD   **OS**

Disc Size: 2.09 mm² (average)   Disc Size: 2.42 mm² (average)

CUP

Linear Cup/Disc Ratio [ ]

| 0.71 ✔ | Asymmetry 0.01 | 0.70 ✔ |
| p = 0.05 | p = 0.41 | p = 0.09 |

Cup Shape Measure [ ]

| 0.06 ✖ | Asymmetry 0.12 ✖ | -0.06 ✔ |
| p < 0.001 | p < 0.001 | p = 0.12 |

RIM

Rim Area [mm²]

| 1.05 ✖ | Asymmetry -0.18 ✔ | 1.23 ❔ |
| p < 0.001 | p = 0.27 | p = 0.003 |

Rim Volume [mm³]

| 0.22 ✔ | Asymmetry -0.05 ✔ | 0.27 ✔ |
| p = 0.06 | p = 0.4 | p = 0.1 |

MRA: Borderline   MRA: Outside normal limits

RNFL

Height Variation Contour [mm]

| 0.26 ✔ | Asymmetry -0.13 ✔ | 0.39 ✔ |
| p = 0.16 | p = 0.05 | p > 0.5 |

Mean RNFL Thickness [mm]

| 0.19 ✔ | Asymmetry 0.00 | 0.19 ✔ |
| p = 0.24 | p = 0.4 | p = 0.24 |

RNFL Profile   RNFL Profile

✔ Within normal limits	p > 0.05
❔ Borderline	p < 0.05
✖ Outside normal limits	p < 0.001

— OD RNFL profile
--- OS RNFL profile
— RNFL profile median

Inter-Eye Asymmetry   46 %

Combined RNFL Profile

Comments:

Signature:
Date: 11/8/2005

Software Version: 3.0.2/370
www.HeidelbergEngineering.com

Note: Text in colored boxes references the matching boxed areas highlighted on the sample report. Example: Text in gold box below refers to the gold boxes on the sample printout.

p-values — Statistical value comparing patient result to normative database.

$p < 0.05$ = Borderline
$p < 0.001$ = Outside Normal Limits

Exact values are displayed unless the p value is well within normal limits ($p > 0.5$) or is well outside normal limits ($p < 0.001$).

CUP, RIM, and RNFL Parameters — Adjusted for age and optic disc size, and compared to the selected ethnic-specific database. Classifications with the corresponding probability values are given.

Asymmetry — Quantifies the difference between eyes and shows the level of significance.

RNFL Profile Comparison — Degree of asymmetry can be visually assessed.

Inter-Eye Asymmetry — Evaluates the symmetry of the RNFL profile between eyes. If the correlation between eyes is good, the value will be near 0%.

1. Assess image quality

The first step in clinical interpretation of any printout is an assessment of image quality. Make sure you are interpreting a good-quality image, since poor quality can affect the results and should be interpreted with caution. Look for a standard deviation (SD) of 30 μm or less. Reports with SD values greater than 30 μm should be repeated when possible. Reports with SD values greater than 50 μm should be used with caution.

2. Check optic disc size

The size of the optic disc is provided and classified as small, average, or large. Small optic discs will tend to have small cups, even in glaucoma, while large optic discs will tend to have large cups, even in healthy eyes.

3. Evaluate the CUP

Check the size, shape, and classification status of the cup parameters. The cup shape parameter has been shown to be very sensitive for detecting early glaucoma.[1] Also check for asymmetric cupping and asymmetric cup parameters.

4. Evaluate the RIM

Check the Moorfields Regression Analysis (MRA) results and rim parameters. When localized rim thinning is detected by the MRA, it will be marked by a yellow exclamation point (❗) or red X (❌) if the result is borderline or outside normal limits, respectively. Even one abnormal sector can indicate significant damage. Pay particular attention to the superior temporal and inferior temporal sectors as these tend to reveal damage first. The rim parameters provide a good overall assessment, but will not always identify local damage because they evaluate the global rim structure. Asymmetry values provide additional information by using the patient as their own reference.

5. Evaluate the RNFL

Carefully inspect the RNFL Profile graphs for local regions that fall outside normal and for areas of asymmetry between eyes. If damage is very localized, the RNFL Profile graph may dip into the abnormal area only briefly. This may reflect early, focal damage that may be missed by global analyses (even MRA). Look for localized dips into the abnormal region to indicate early loss. Also, symmetry between the eyes is important. Even if both eyes are within the normal range, a large asymmetry can indicate early damage. The inter-eye asymmetry parameter provides a quantitative assessment of the symmetry between eyes.

Ethnic-Selectable Databases

The 3.0 software utilizes ethnic-specific databases to determine the normal range of healthy eyes. People of African descent as well as Hispanics have been found to be at greater risk for developing glaucoma, and some research suggests racial differences in the optic nerve exist that are mainly associated with differences in optic disc size.[2]

Database	Number of Normal Eyes
Caucasian	> 700
African Origin	> 200
Indian (Southeast Asian)	> 100
Hispanic	in process
Asian	in process

1. Uchida H, Brigatti L, Caprioli J. Detection of structural damage from glaucoma with confocal laser image analysis. *Invest Ophthalmol Vis Sci.* 1996;37:2393-2401.

2. Girkin CA, McGwin G Jr, Xie A, Deleon-Ortega J. Differences in optic disc topography between black and white normal subjects. *Ophthalmology.* 2005;112:33-39.

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