

Study Spotlight: Enhancing Diabetic Eye Screening with ZEISS CLARUS



Seeing beyond

ZEISS CLARUS demonstrates high-performance imaging, a clear edge over Optos in identifying diabetic retinopathy with greater accuracy and precision

Source



Title

The Scanning CONfocal Ophthalmoscopy for Diabetic eye screening (CONCORDIA) study paper 1



Authors

Peter Scanlon, et al



Publication

Eye
DOI: 10.1038/s41433-024-03360-2

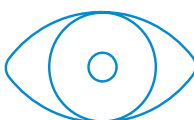
Study Design

Device



- ZEISS CLARUS 700
- Nikon Optos California
- Canon CR2
- Kowa AF
- Topcon Triton
- Topcon 2000

Sample Size & Procedure



- 1497 (2993 eyes)
- Non-myd images taken with CLARUS 700 and Optos California
- Mydriatic images for unassessable cases

Main Evaluation Criteria



- Number of gradable and ungradable images (pre & post dilation)
- Sensitivity and specificity of the CLARUS and Optos cameras in detecting any diabetic retinopathy and referable diabetic retinopathy compared to the reference standard

Results & Key Findings

| Any DR | CLARUS | OPTOS |
|---------------------------|--------------------------------|-------------------------------|
| Sensitivity | 94.2% | 91.9% |
| Specificity | 87.3% | 78.1% |
| Inter-grader agreement | Near perfect agreement (0.839) | Substantial agreement (0.632) |
| Lesion masked by artefact | 8 | 16 |
| Lesion not observed | 15 | 29 |

| Referable DR | CLARUS | OPTOS |
|--------------|--------|-------|
| Sensitivity | 86% | 77.6% |

| Unassessable images | CLARUS | OPTOS |
|---------------------|--------|-------|
| Before dilation | 3.3% | 5.1% |
| After dilation | 1.7% | 3.4% |

Both devices showed strong performance in detecting any diabetic retinopathy, with CLARUS slightly outperforming Optos. Both wider fields detected more referable retinopathy peripherally.

- CLARUS showed better specificity, meaning it had fewer false positives compared to Optos.
- CLARUS showed higher sensitivity for detecting referable DR. Referable retinopathy means stage 2 or 3 retinopathy or diabetic maculopathy and should be referred to specialist about further tests and possible treatment options.
- CLARUS produced fewer unassessable images than Optos, making it more reliable for capturing usable images in both non-mydriatic and mydriatic modes.

Conclusions

Color - an important assessment for interpretation

The color differences made the interpretation of drusen and hard exudate more difficult for graders. CLARUS has true color with RGB channels vs Optos with Red and Green channels which allows graders more information for interpretation.

Higher Sensitivity for DR Detection

The CLARUS demonstrated **94.2%** sensitivity for detecting any diabetic retinopathy, indicating a strong performance in identifying a wide range of DR cases, making it a reliable screening tool for early detection.

Better Detection of Referable Retinopathy

CLARUS achieved **86% sensitivity, outperforming Optos (77.6%)**, particularly in identifying critical cases like maculopathy. This gives CLARUS an edge in ensuring patients with advanced DR are flagged for timely treatment.

Superior Peripheral Imaging Accuracy

CLARUS had fewer issues with image artefacts, like lids and lashes that could obscure lesions. This allows for better inferior/superior imaging, providing a more accurate view of retinal health beyond the central field as compared to Optos.

For further details see publication
Medical Affairs, Global Post-Approval Studies