Accuracy in IOL power calculation

Improving outcomes in post-hyperopic LVC eyes

Seeing beyond

Source

Title
Intraocular Lens Power Calculations in Posthyperopic Laser Vision Correction Eyes: Comparing Legacy and New No-History Formulas

Authors
Sanjana Suraneni, Adam R. Bleeker, Abdelrahman M. Anter, Sebastian Leal, David A. Murphy, Kamran M. Riaz, David L. Cooke, Rahul S. Tonk

Publication
https://www.sciencedirect.com/science/article/abs/pii/S0002939425004799

Methodology

Set-up

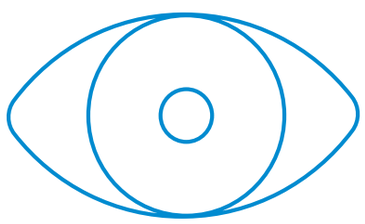
To obtain biometry measurements, including standard (K), posterior (PK), and total keratometry (TK) values, a SS-OCT biometer was used.

Refractive prediction errors were calculated and compared for:

- Two Legacy H-LVC formulas using K values
- Six new H-LVC formulas using K values
- Four new formulas using PK / TK

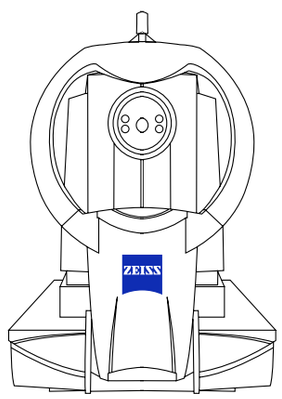
All formulas were ranked by root mean square error (RMSE) and percentage of eyes with prediction errors within ±0.50 D. Heteroscedastic (RMSE) testing was used to evaluate relative formula performance.

Sample Size



153 eyes of
109 patients

Used ZEISS device



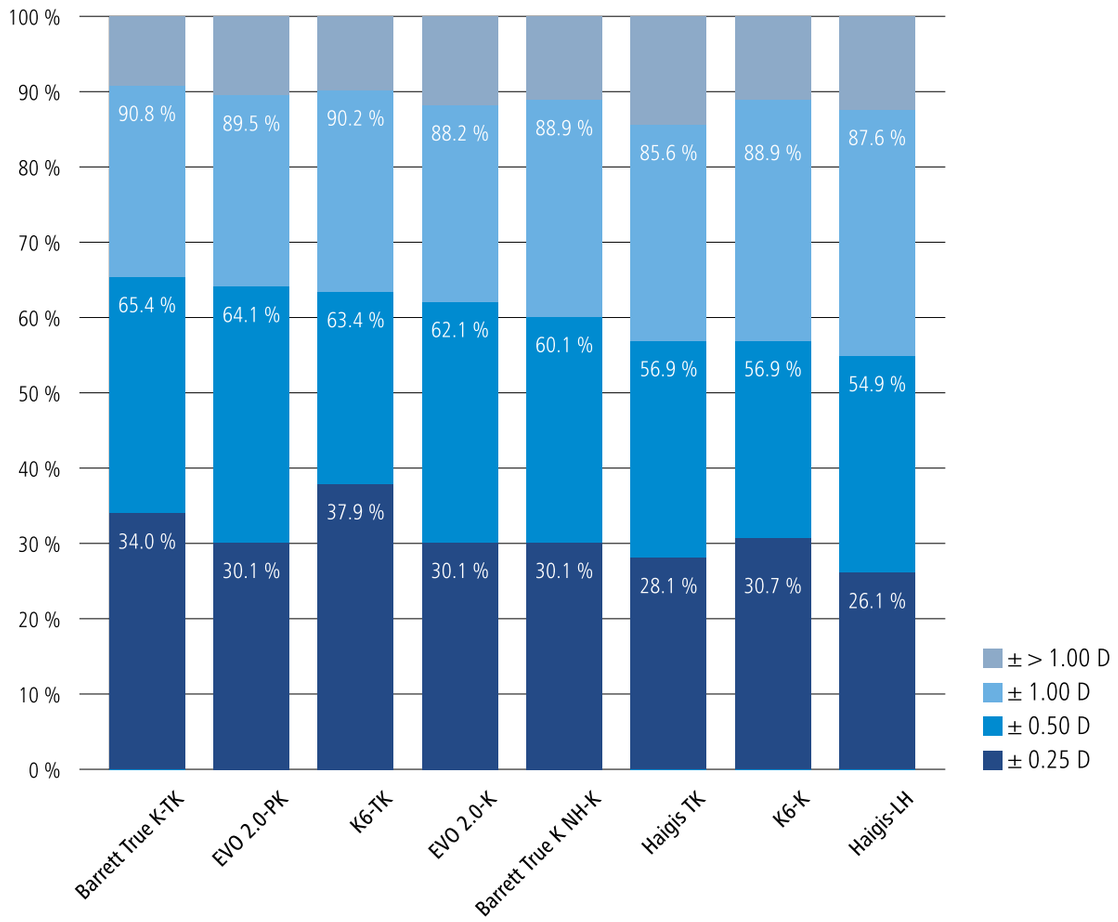
ZEISS IOLMaster 700
with Total Keratometry (TK®)

Results

In post-hyperopic LVC eyes, formulas using PK/TK from ZEISS IOLMaster 700 show a higher percentage of eyes within ±0.50 D compared to legacy formulas.

- New H-LVC formulas demonstrated superior refractive accuracy compared with legacy formulas.
- Formula performance may improve when PK/TK values are incorporated.
- When PK/TK values are unavailable, EVO 2.0-K and Barrett True K showed reliable performance.

Formula Accuracy in Post-Hyperopic Laser Vision Correction Eyes



For further details and full table see publication

en-INT_32_200_0258I © Carl Zeiss Meditec AG, 2026. All rights reserved.