Table 5-3
Selected List of Formulas

Formula Name	*Generation of Theoretical Formula*	*Variables for ELP Prediction*	*Best Range of Use*
SRK I	Regression-based	n/a	22.0 to 24.5 mm
SRK II	Regression-based	n/a	Improved slightly from longer and shorter eyes compared with SRK I
Binkhorst	2nd	AL	Better for average-length eyes
SRK/T	3rd (combo regression with theoretical model)	AL, K	> 26.0 mm
Hoffer Q	3rd	AL, K	< 24.0 mm
Holladay I	3rd	AL, K	24.5 to 26.0 mm
Haigis-L	3rd	AL, ACD	Broad
Olsen	4th	AL, K, ACD, LT	Broad
Holladay II	4th	AL, K, ACD, WTW, LT, age, preoperative refraction	Broad
Barrett Universal Formula II	4th	AL, K, ACD, LT, WTW, preoperative refraction	Broad

Abbreviations: AL, axial length; K, keratometry; LT, lens thickness; WTW, white-to-white.

Special Occasions

IOL Calculation for Post–Refractive Surgery Eyes

Sources of Error

Often, patients who have had corneal refractive surgery are those most interested in refractive or multifocal IOLs, which makes accuracy of intraocular lens power calculation all the more important. There are 3 main challenges in calculating IOL power in post–refractive surgery eyes: index of refraction error, instrument error, and formula error.

Keratometry and keratoscopy estimate cornea power based on assumptions that the cornea is a spherocylinder, a thin lens, and has a fixed anterior-to-posterior corneal curvature. However, for corneas subjected to photorefractive keratectomy or LASIK, these assumptions are violated. The anterior surface of the cornea contributes roughly +49 D of power, whereas the posterior surface contributes on average -6 D of power, such that the overall net power averages to +43 D. As keratometers and topographers are only able to