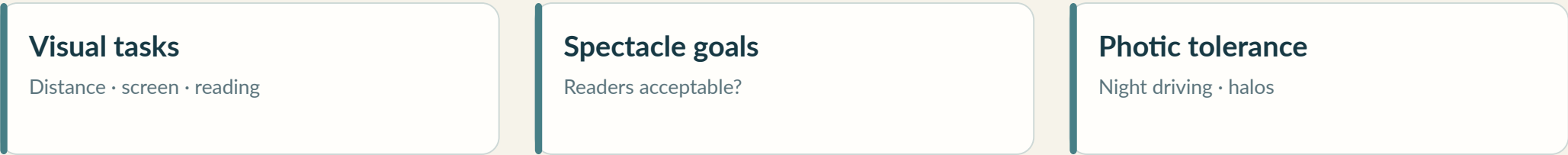


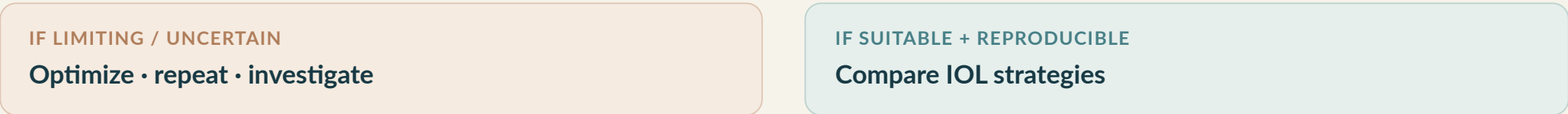
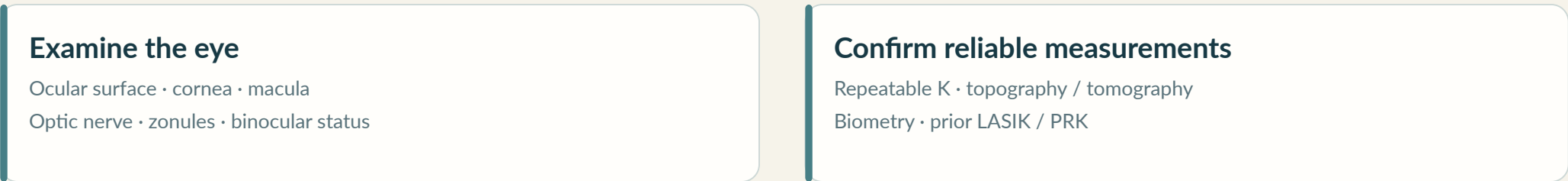
# From Patient Profile to IOL Strategy

Evidence-informed clinical pathway · Read at a glance

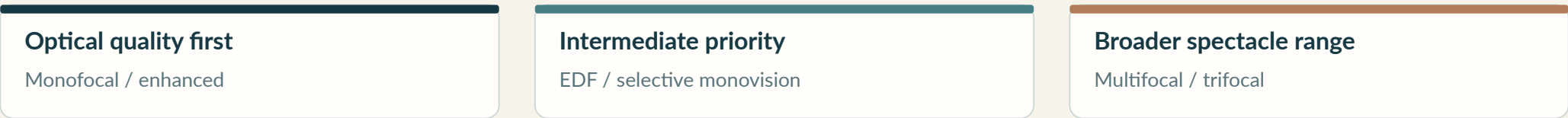
## 01 PATIENT PRIORITIES



## 02 OCULAR SUITABILITY + MEASUREMENT CONFIDENCE



## 03 MATCH THE GOAL TO A STRATEGY



PARALLEL: TORIC PLAN (P2) · CORNEAL OPTICS (P3) · SHARED DECISION

# Toric Planning Begins with the Incision

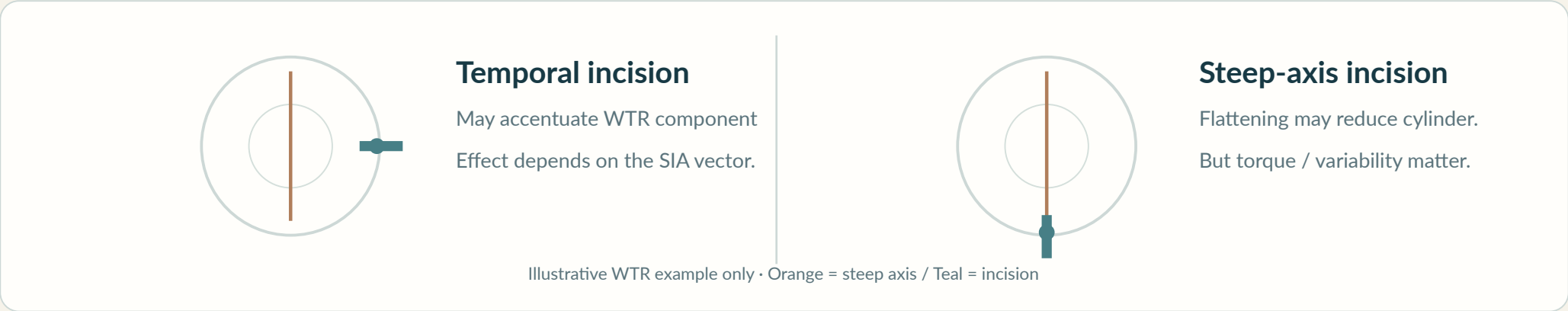
Preoperative cylinder is a starting point — predicted residual cylinder drives the final comparison.

## 01 FOUR INPUTS, ONE VECTOR-BASED DECISION



LOW CYLINDER ≈0.50–1.50 D: compare incision + SIA scenarios; no fixed WTR / ATR cut-offs. [1,2,4]

## 02 ILLUSTRATIVE WTR CASE – DIFFERENT INCISION STRATEGY



PCA tendency: WTR component ↓ · ATR component ↑ · Oblique: recheck magnitude + axis [7]

## 03 COMPARE PREDICTED POSTOPERATIVE REFRACTION

|                                                                                                                                         |        |                                          |             |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------|-------------|
| <div>Non-toric strategy</div> <div>No own SIA? Declare an incision-matched estimate; test lower / base / higher scenarios (p. 4).</div> | versus | <div>Available toric powers / axes</div> | [1,2,4,5,9] |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------|-------------|

# Corneal Optics: Reference, Not Veto

Use the measured aberration profile to inform the optical strategy — never a single-number exclusion.

## 01 CORNEAL WAVEFRONT • 4 MM MEASUREMENT ZONE [3]

Total HOA RMS

**<0.30  $\mu\text{m}$**

Single-MIOL study reference

Coma / trefoil

**<0.20  $\mu\text{m}$**

Single-MIOL study reference

SA magnitude

**<0.10  $\mu\text{m}$**

Single-MIOL study reference

**Not universal eligibility thresholds. No validated 0.50  $\mu\text{m}$  HOA exclusion rule.**

## 02 SIGNED CORNEAL SA ( $Z_4^0$ ) + PRIOR ABLATION

**Post-myopic LASIK**

Often positive SA

Confirm sign + pupil zone

Consider optical compensation

**Post-hyperopic LASIK**

Often negative SA

Confirm sign + pupil zone

Avoid adding negative SA by default

**Irregular / decentered**

Coma / quality concern

Optimize surface • repeat maps

Reassess complex IOL optics

## 03 OPTICAL INTERPRETATION

**Check device + measurement diameter + repeatability + aberration components.**

Corneal HOA is not total-ocular HOA. SA sign matters; previous LASIK alone does not determine the lens.

# Evidence & Interpretation Notes

Methods, uncertainties and primary references • Supporting information for pages 1–3

## CLINICAL INTERPRETATION • CONDITIONAL GUIDANCE, NOT FIXED ELIGIBILITY RULES

### LOW CYLINDER / TORIC COMPARISON [1,2,4]

At  $\approx 0.50$ – $1.50$  D, compare predicted residual refractive cylinder (magnitude + axis), non-toric versus available toric powers. Regular anterior K  $\geq 1.0$  D prompts guideline evaluation; it does not establish final eligibility. Goals and overcorrection risk matter.

### WTR / ATR / OBLIQUE [7,8]

PCA often offsets WTR and adds ATR. Incisional flattening depends on meridian, width and torque; the WTR sketch is conditional. Oblique cases require a full vector calculation. No universal axis-specific cut-offs.

### PERSONAL SIA DATA [5,8]

Use paired preoperative and stable postoperative K, with the same method. Record final incision width, meridian, technique and laterality. Derive a double-angle vector centroid and dispersion, not a mean absolute SIA magnitude. Centroid direction need not equal incision meridian; use calculator-compatible inputs.

### CALCULATOR-COMPATIBLE INPUTS [4,9]

Model the actual incision, PCA and effective lens position (ELP; cylinder conversion). Follow K / total-K and SIA conventions; avoid double counting. Anterior SIA plus estimated PCA worsened prediction in one specific workflow [9]; this is model-dependent.

### NO PERSONAL SIA / SENSITIVITY • OIE INTERPRETATION

Declare an incision-matched estimate + source. Compare plausible lower / base / higher magnitudes and direction variation. Missing data do not justify zero SIA; zero may be model-specific. If scenarios disagree, reconsider marginal toric benefit. Not a validated rule.

### CORNEAL HOA / SIGNED SA [3,6]

4-mm references: 270 patients, one apodized diffractive MIOL; few high-HOA eyes. No transfer to other optics, devices or zones. Absolute SA magnitude loses sign: assess signed  $Z_4^0$  / pupil zone separately. Ablation history alone does not prescribe an IOL.

## PRIMARY REFERENCES • FULL TITLES / DOI

[1] ESCRS. Recommendations for Cataract Surgery. Extended guidance, sections 4.1.6–7, 4.2.7–8, 4.3.3–4. [escrs.org/escrs-recommendations-for-cataract-surgery](https://escrs.org/escrs-recommendations-for-cataract-surgery). Accessed 13 Oct 2026.

[2] Wanten JC, et al. ESCRS guideline for cataract surgery 2024: executive summary. *J Cataract Refract Surg*. 2026;52(9):e1–e13. doi:10.1097/j.jcrs.0000000000002012.

[3] Fernández J, et al. Influence of Corneal Higher Order Aberrations on Visual Performance With a Multifocal Intraocular Lens. *J Refract Surg*. 2025;41(4):e291–e299. doi:10.3928/1081597X-20250213-01.

[4] Ferreira TB, Ribeiro F. How Can We Improve Toric Intraocular Lens Calculation Methods? Current Insights. *Clin Ophthalmol*. 2020;14:1899–1908. doi:10.2147/OPHTH.S238686.

[5] Kamiya K, Iijima K, Ando W, Shoji N. Comparison of Mean and Centroid of Surgically Induced Astigmatism After Standard Cataract Surgery. *Front Med (Lausanne)*. 2021;8:670337. doi:10.3389/fmed.2021.670337.

[6] Wang L, Koch DD. Intraocular Lens Power Calculations in Eyes with Previous Corneal Refractive Surgery: Review and Expert Opinion. *Ophthalmology*. 2021;128(11):e121–e131. doi:10.1016/j.ophttha.2020.06.054.

[7] Koch DD, et al. Contribution of posterior corneal astigmatism to total corneal astigmatism. *J Cataract Refract Surg*. 2012;38(12):2080–2087. doi:10.1016/j.jcrs.2012.08.036.

[8] Chang SW, Su TY, Chen YL. Influence of ocular features and incision width on surgically induced astigmatism after cataract surgery. *J Refract Surg*. 2015;31(2):82–88. doi:10.3928/1081597X-20150122-02.

[9] Fernández J, et al. Toric Intraocular Lens Calculation Considering Anterior Surgically Induced Astigmatism and Posterior Corneal Astigmatism. *Curr Eye Res*. 2022;47(1):25–31. doi:10.1080/02713683.2021.1948064.

Source appraisal: [3,6–9] abstract-level; full-method verification remains limited. Individual outcome uncertainty persists.

**Independent OIE synthesis • Not a prospectively validated algorithm. No manufacturer or society endorsement.**