ADVANCES IN REFRACTIVE SURGERIES

Dr. Ali Abdul Kareem

MBChB FICMS CAB(Oph) FICO(Lon) MRCS(Ed) ISCRS
Clinical Ophthalmologist
Lecturer at Al-Kindy College of Medicine/University of Baghdad

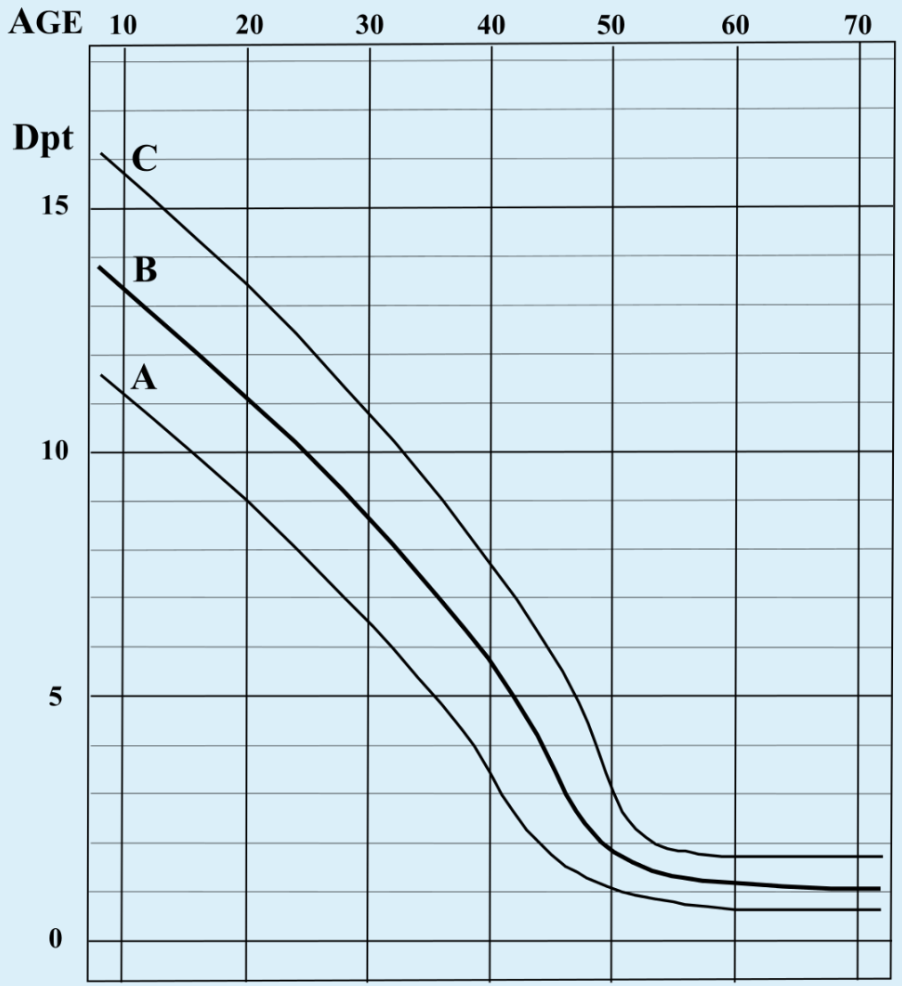
Goal

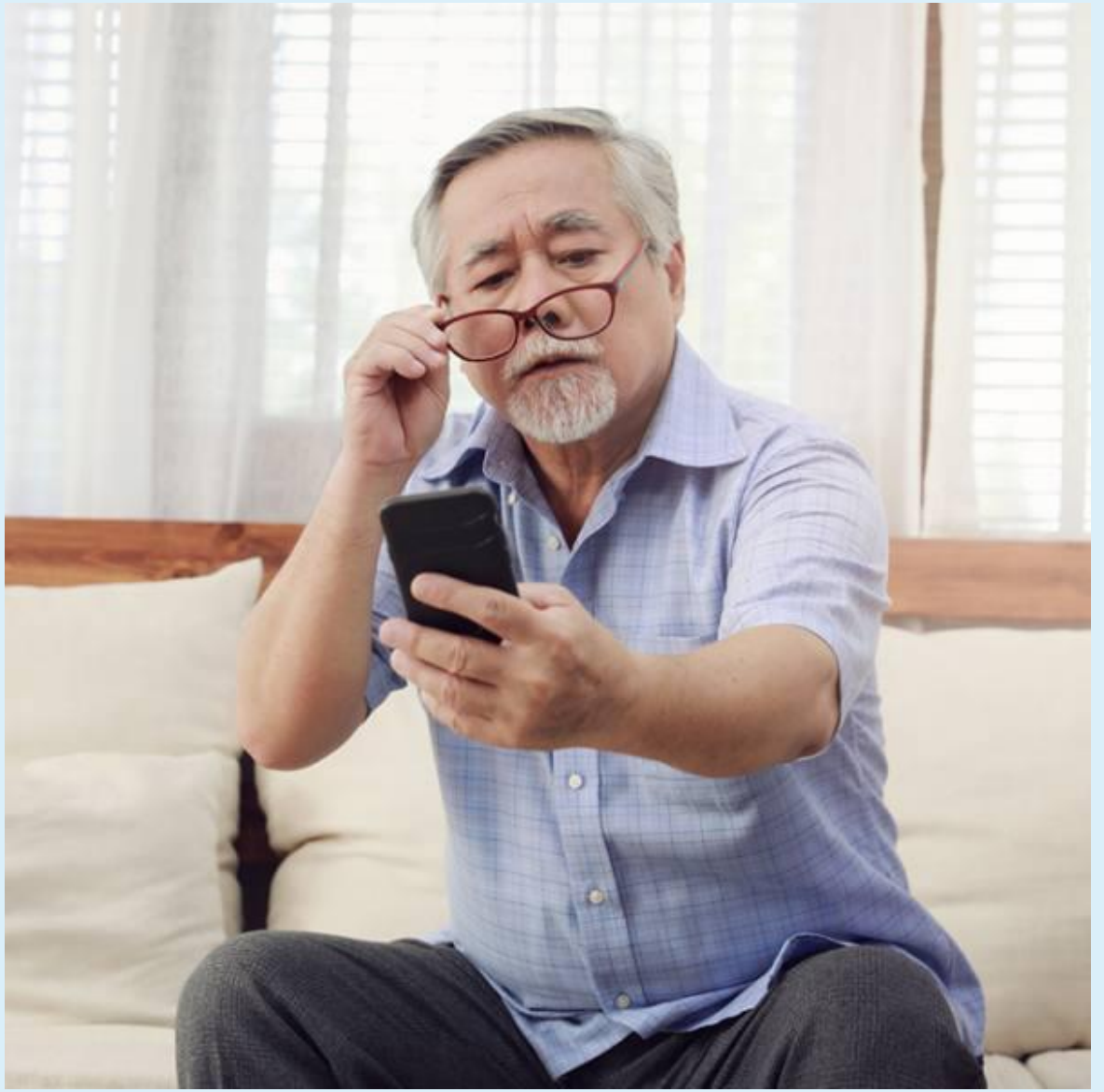
Best Corrected Visual Function For All Distances

Refractive Errors

- Myopia
- Hyperopia
- Astigmatism
- ***Presbyopia***

Accommodation Amplitude (Dpt) vs. Age





Pre-Presbyopia

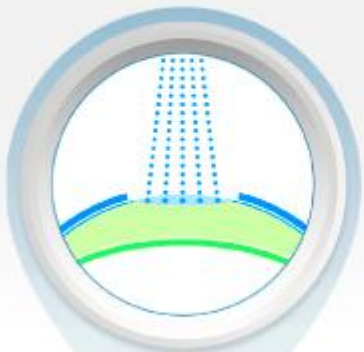
- Correction for FAR
- Corneal
- Intraocular

Corneal

- Phototherapeutic keratectomy (PRK)
- LASer Insitu Keratomileusis (LASIK)
- ReLEx SMILE (Refractive Lenticule Extraction, SMall Incision Lenticule Extraction)

PRK

Laser Vision Correction

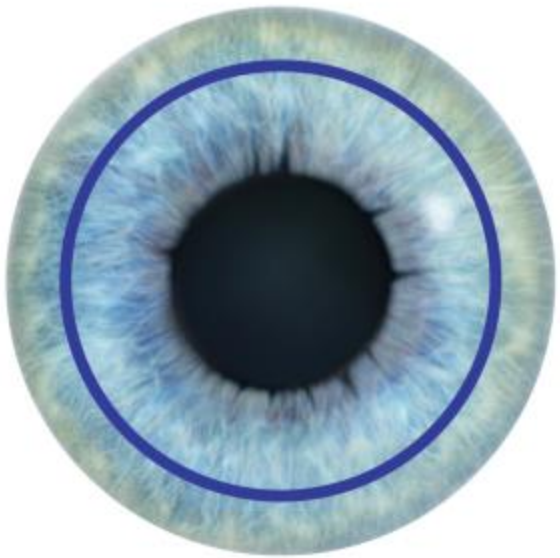


LASIK

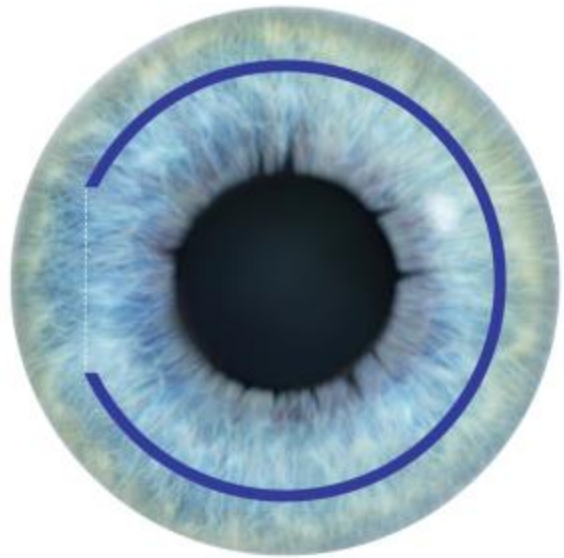
Laser Vision Correction

SMILE

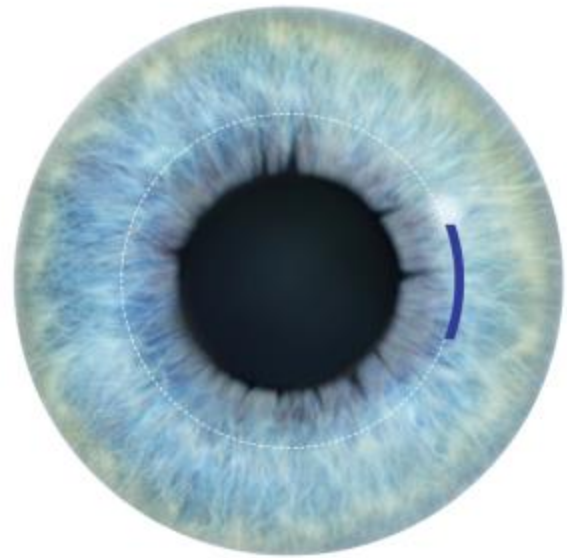
Laser Vision Correction



PRK



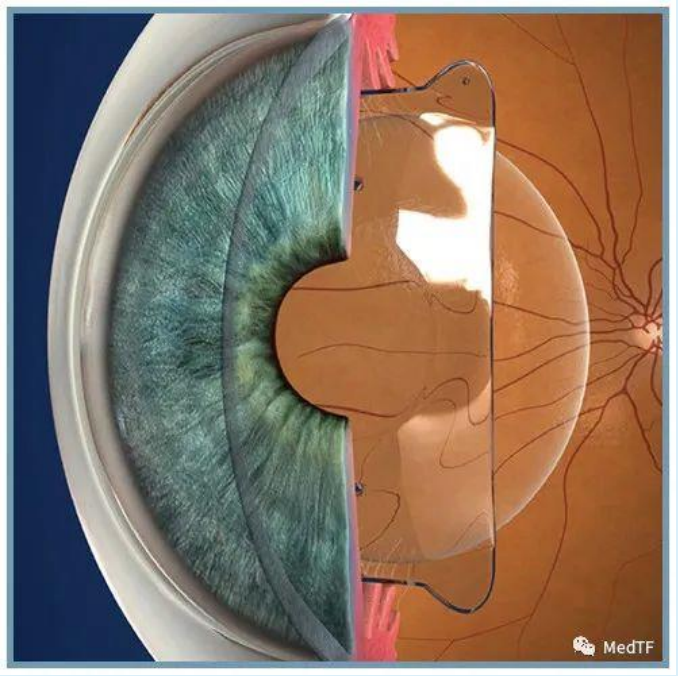
LASIK



SMILE

Intraocular

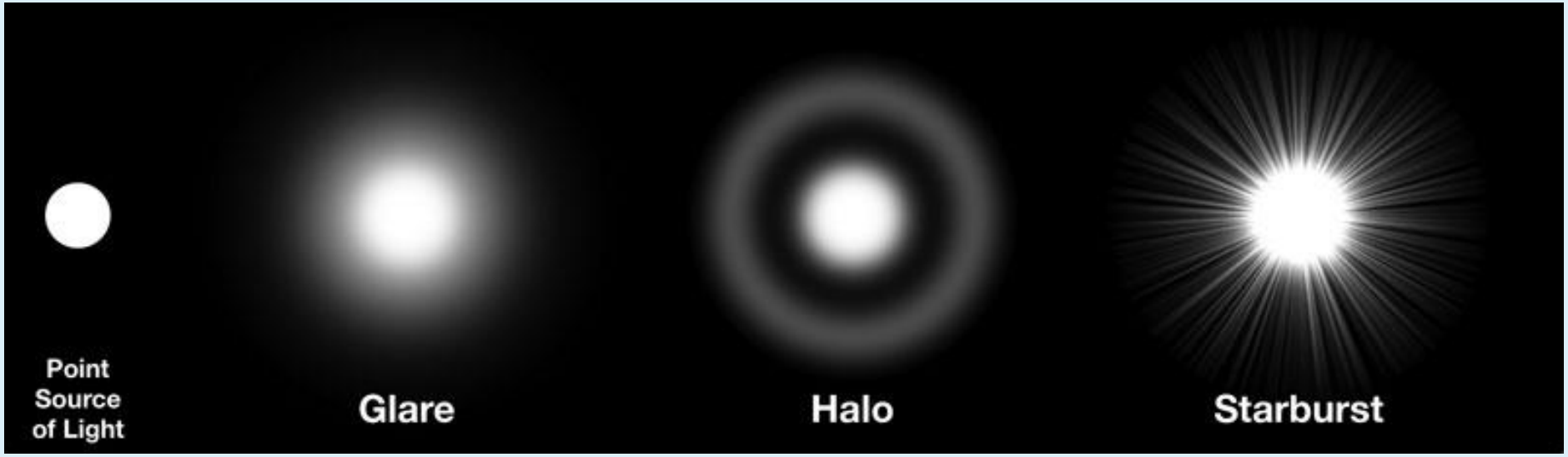
- Implantable Contact Lens ‘’intraocular Collamer Lens’’ (ICL)
- Refractive Lens Exchange



Post-Presbyopia

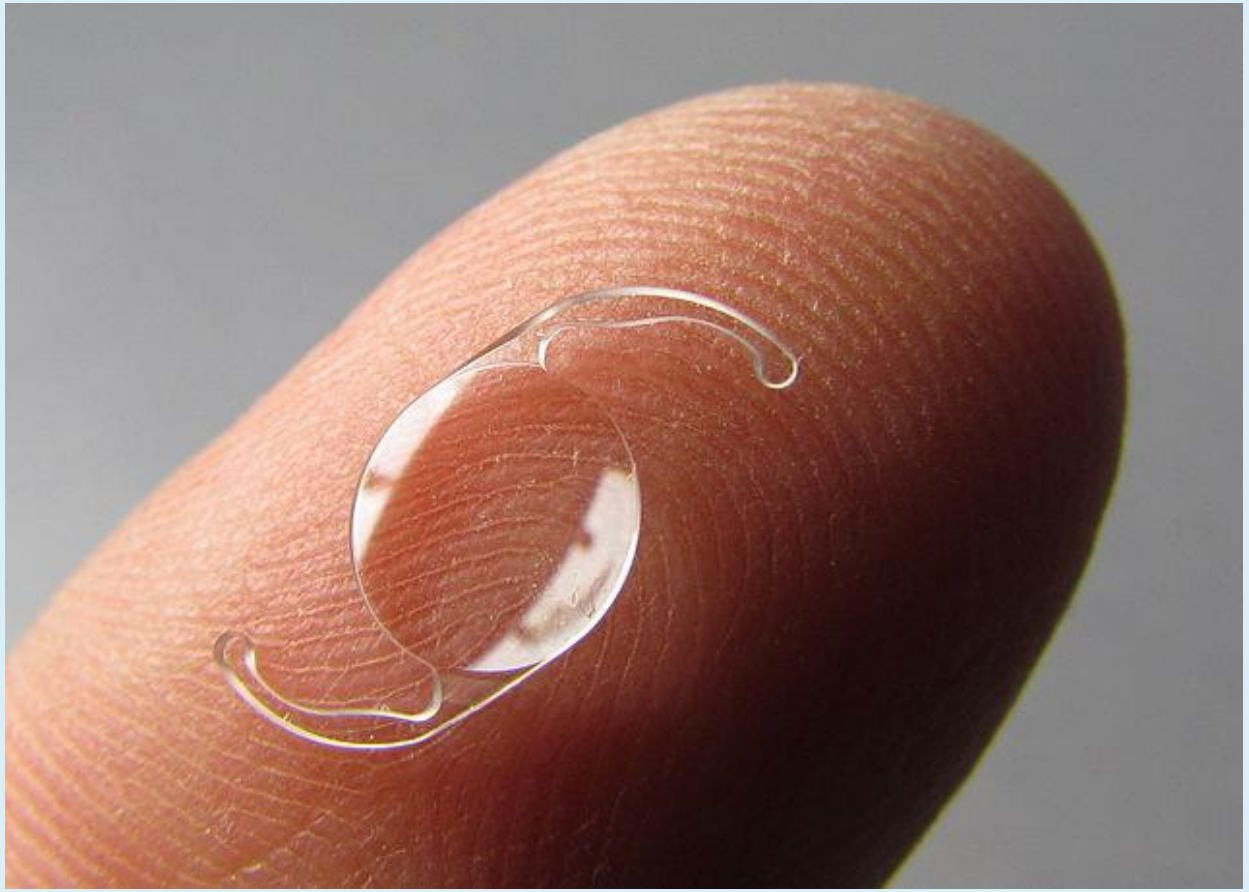
- Correction For Far and NEAR
- Need more than one focus for different distances:
- Near 30-40 cm
- Intermediate 50-75 cm
- Far 6 M

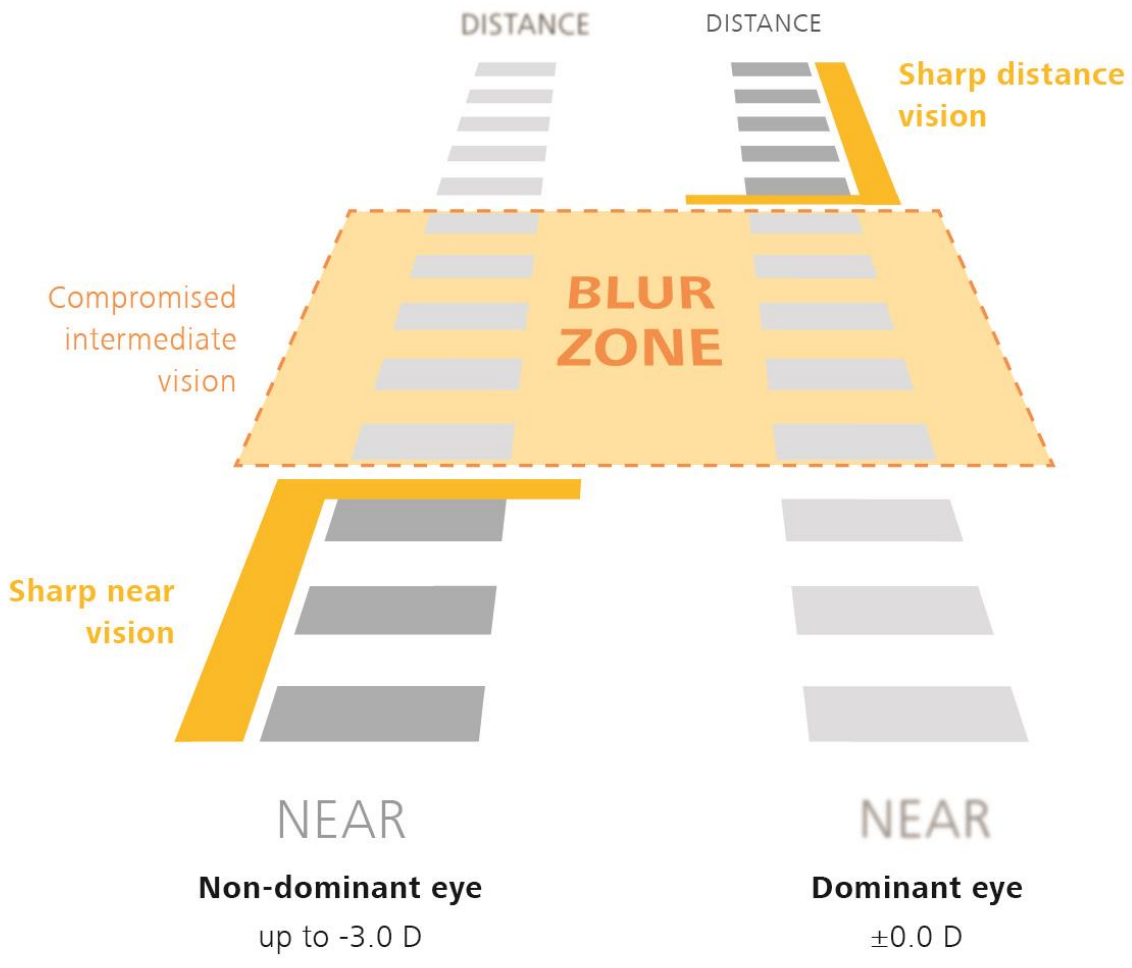
- Visual Acuity (Far, Intermediate and Near)
- Contrast Sensitivity
- Glass Independence
- Visual phenomenon: Glare, Halos, Night Vision difficulties

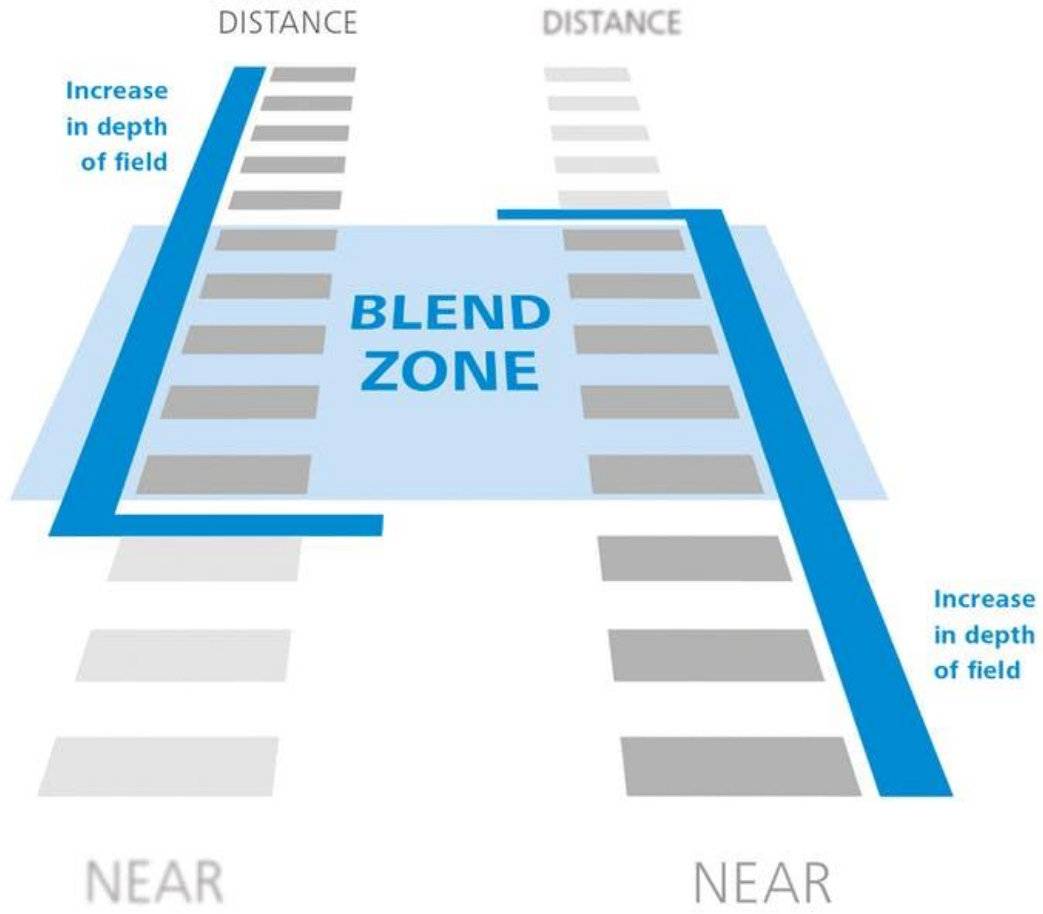


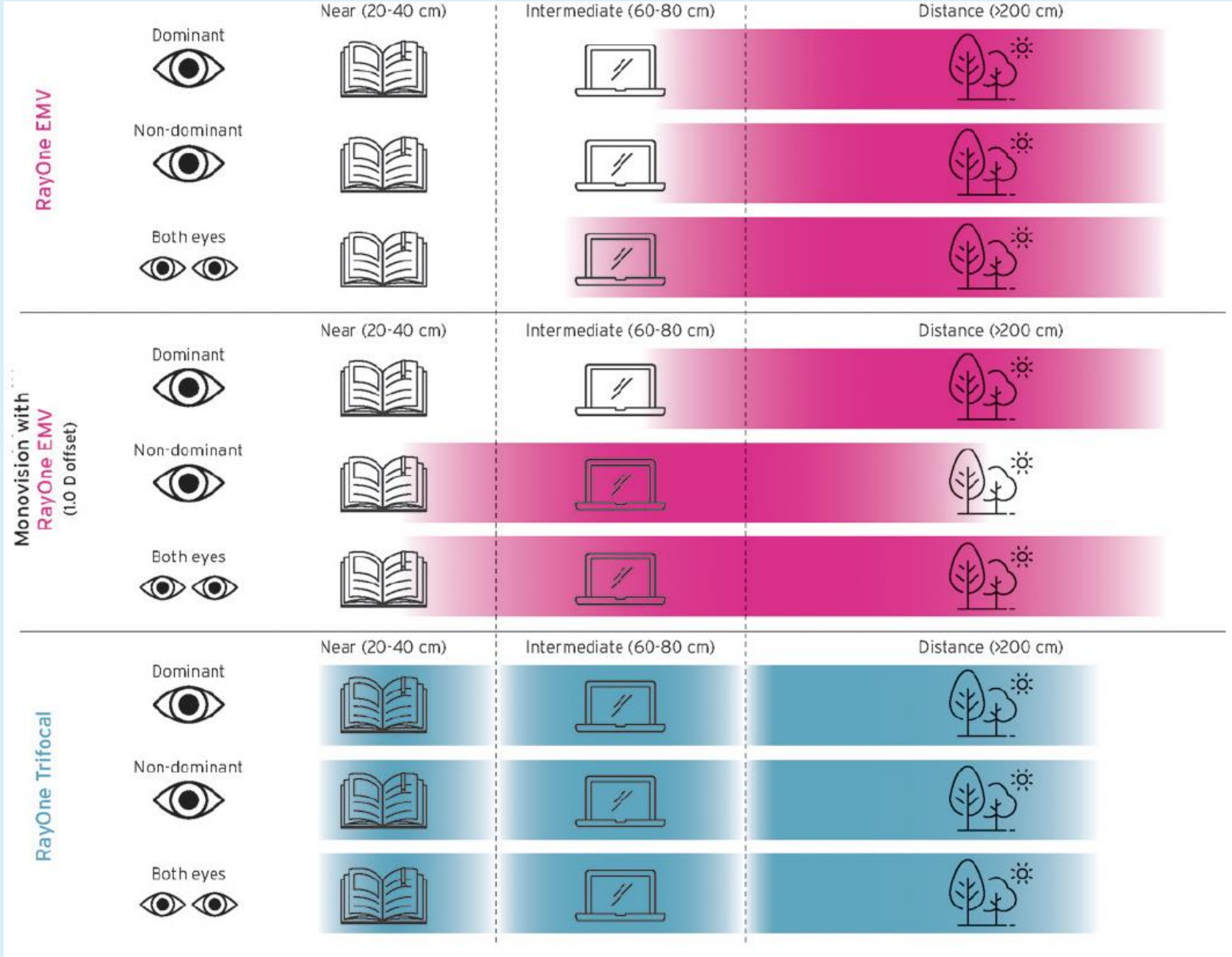
Options

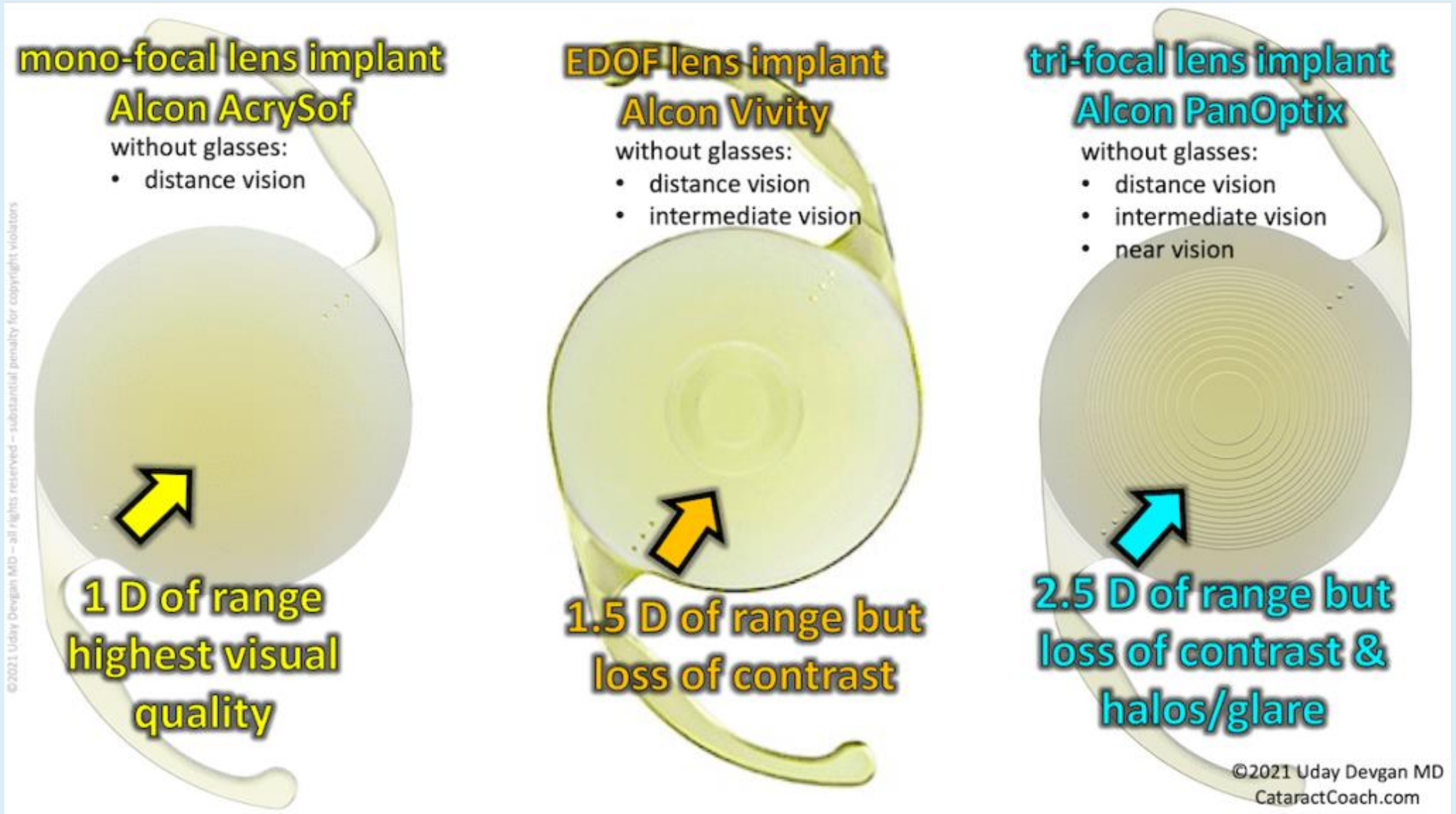
- Trifocal IOLs
- Multifocal IOLs
- Monovision
- Mini-monovision
- NEW!




DISTANCE
DISTANCE
Sharp distance vision
Compromised intermediate vision
BLUR ZONE
Sharp near vision
NEAR
NEAR
Non-dominant eye
up to -3.0 D
Dominant eye
±0.0 D


DISTANCE
DISTANCE
Increase in depth of field
BLEND ZONE
Increase in depth of field
NEAR
NEAR
Dominant eye
±0.0 D
Non-dominant eye
-1.5 D


RayOne EMV
Near (20-40 cm)
Intermediate (60-80 cm)
Distance (>200 cm)
Dominant
Non-dominant
Both eyes
Monovision with RayOne EMV (1.0 D offset)
Near (20-40 cm)
Intermediate (60-80 cm)
Distance (>200 cm)
Dominant
Non-dominant
Both eyes
RayOne Trifocal
Near (20-40 cm)
Intermediate (60-80 cm)
Distance (>200 cm)
Dominant
Non-dominant
Both eyes


mono-focal lens implant
Alcon AcrySof
without glasses:
• distance vision
1 D of range
highest visual
quality
EDOF lens implant
Alcon Vivity
without glasses:
• distance vision
• intermediate vision
1.5 D of range but
loss of contrast
tri-focal lens implant
Alcon PanOptix
without glasses:
• distance vision
• intermediate vision
• near vision
2.5 D of range but
loss of contrast &
halos/glare
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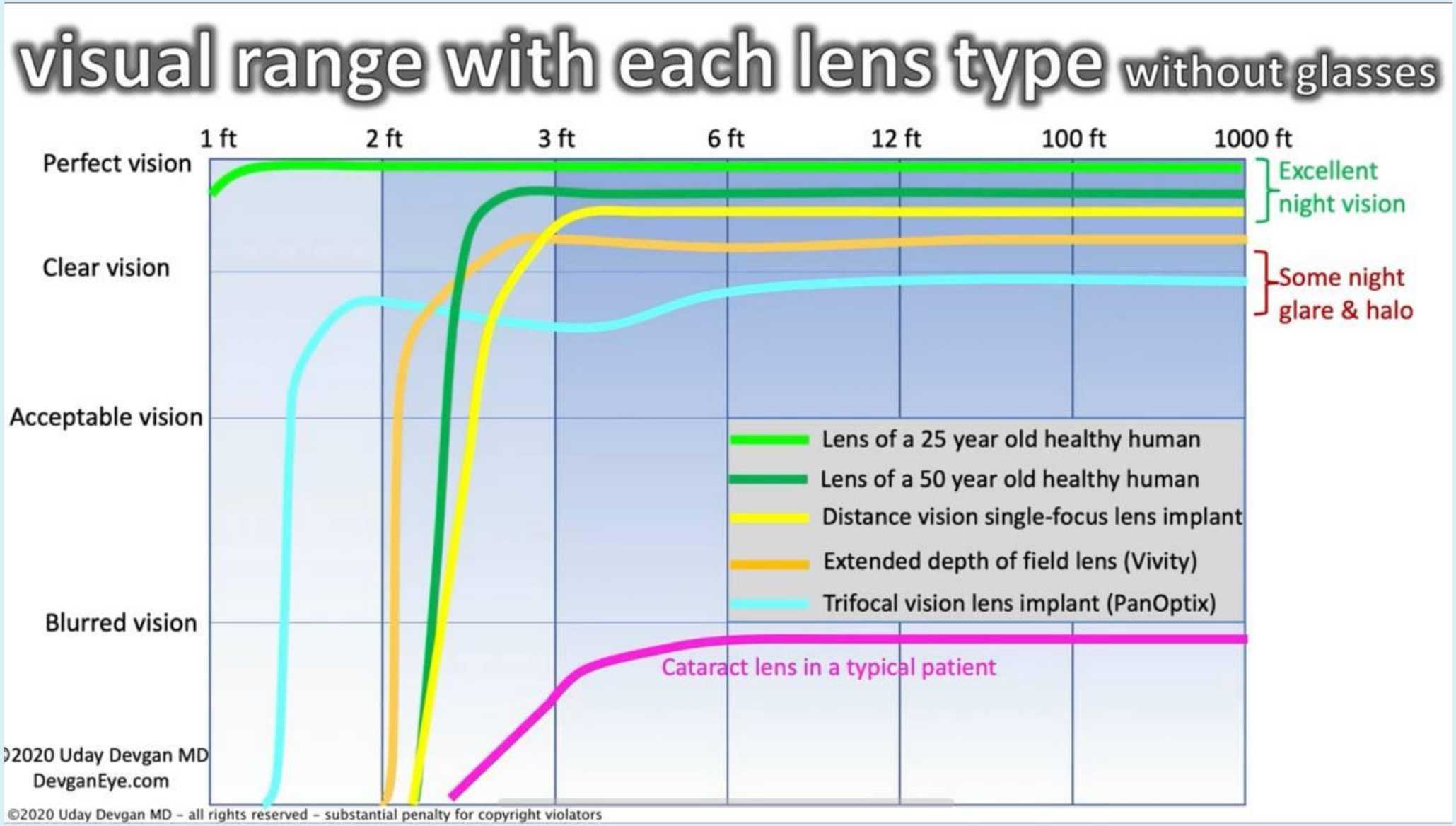
LENS TYPE	DISTANCE	INTERMEDIATE	NEAR	OTHER FEATURES
PREMIUM MONOFOCAL TECNIS 1 Asphheric IOL	✓	✗	✗	UV FILTER, ABERRATION CORRECTION
PREMIUM TORIC MONOFOCAL	✓	✗	✗	UV FILTER, ASTIGMATISM CORRECTION
TECNIS Eyhance IOL MONOFOCAL	✓	✓	✗	UV FILTER, ENHANCED DEPTH OF FOCUS
TECNIS Symfony Extended Range of Vision IOL	✓	✓	✓✗	UV FILTER, ENHANCED DEPTH OF FOCUS
TECNIS OptiBlue Synergy IOL	✓	✓	✓	UV FILTER, VIOLET FILTER, GLASSES FREE FOR MOST TASKS

	AcrySof IQ PanOptix PRESBYOPIA-CORRECTING IOL	TECNIS Synergy™ IOL
Long-Distance (Driving, TV)	A (95-99) ★	A (90-99)
Mid-Range (Dashboard, Desktop computer)	A	A
Near (Cell phone/reading)	A (16”)	A (13”) ★
Night time Halo	Yes	Yes
Overall Quality of Vision	A	A
Time after surgery before vision approaches optimal clarity (for most patients)	1-7 days ★	1-14 days
Need for glasses after surgery	Minimal	Minimal
Overall satisfaction	High	High
Rate of explant due to patient dissatisfaction	1:300	1:300
Performance in eyes that have had prior RK	Unknown	Good
Performance in eyes that have had prior LASIK	Excellent	Excellent
Performance in eyes with retinal pathology	Very Good	Very Good
Visible Cosmetic Reflection from lens surface	Yes	No ★


visual range with each lens type without glasses
1 ft
2 ft
3 ft
6 ft
12 ft
100 ft
1000 ft
Perfect vision
Clear vision
Acceptable vision
Blurred vision
Excellent night vision
Some night glare & halo
Lens of a 25 year old healthy human
Lens of a 50 year old healthy human
Distance vision single-focus lens implant
Extended depth of field lens (Vivity)
Trifocal vision lens implant (PanOptix)
Cataract lens in a typical patient
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So how do you choose?

distance single-focus lens implant	"I want the highest quality of vision, the best night vision, and I will happily wear glasses for computer, cell phone and reading." 85% of patients
extended depth of field lens (Vivity)	"I want good quality of vision, good night vision, and I will happily wear glasses for cell phone and reading." 7% of patients
trifocal lens implant (PanOptix)	"I want to be able to read, see my cell phone and computer without glasses, and to achieve that, I will happily tolerate less contrast at all ranges and glare/halos at night." 8% of patients

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Near Future

- Accommodative or Shape-changing, fluid-optic IOLs

LensGen

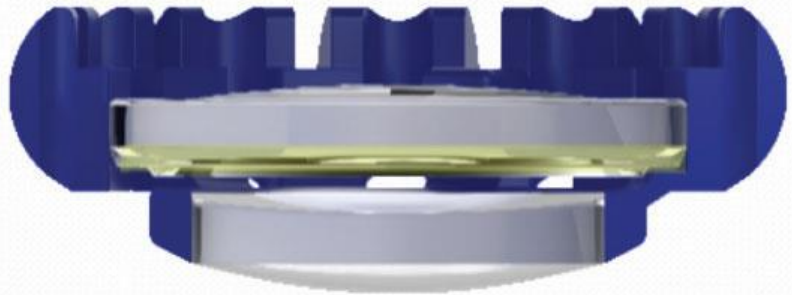
Base Lens

Fluid Lens

Juvene®

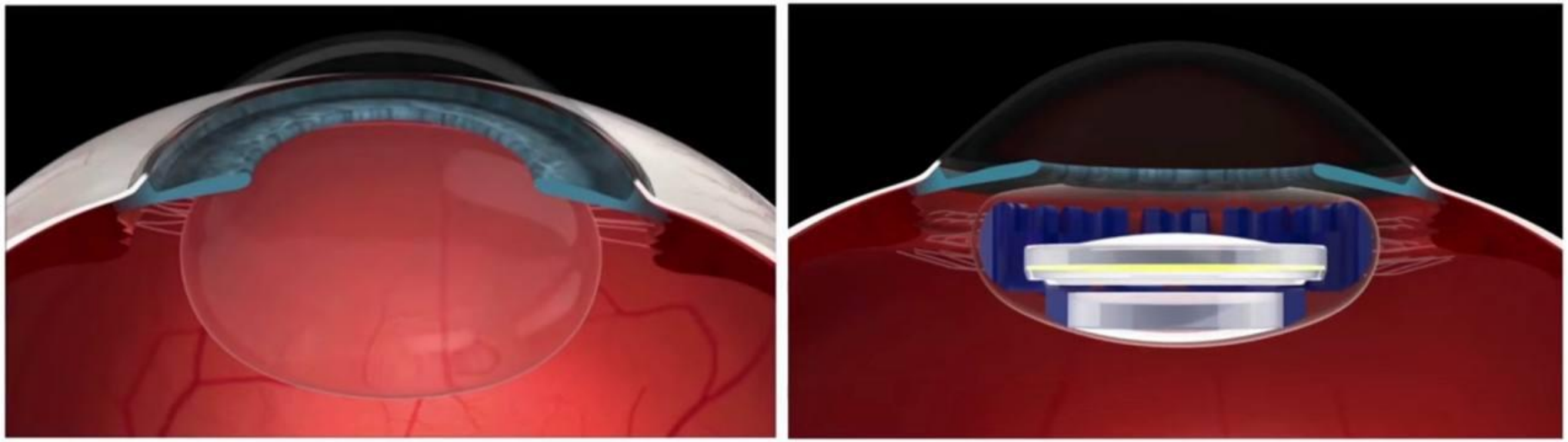
Modular Fluid IOL

DISTANCE



INTERMEDIATE AND NEAR

- IOL Safety Compromises: Mostly Eliminated



Juvene's capsule filling design reduces all these common IOL compromises: ELP Shift, Rotation, PCO and Retinal Tension

• Quality of Vision – Subjective Experience

- All eyes were asked about common visual symptoms
- In the upcoming IDE study, a validated questionnaire will be used to confirm these very low rates of complaints
- The non-light-splitting design may provide for a better day-to-day visual experience than that with other premium IOLs

Directed Chief Complaint	Yes	No
Glare during day	0	24 (100%)
Glare at night	0	24 (100%)
Halos	0	24 (100%)
Starbursts	0	24 (100%)
Distorted vison	0	24 (100%)
Photophobia	0	24 (100%)
Diplopia	0	24 (100%)
Other (Blurry vision)	2 (8.3%)	22 (91.7%)
Data unavailable*	3	

*Data unavailable were missed due to unforeseen changes to protocols during COVID-19 pandemic

- Thanks