

# Nebraska Laser Eye Associates

Mark Johnston MD FRCSC  
[www.nebraskaeye.com](http://www.nebraskaeye.com)

# Question 1

- Is refractive error a disability fully mitigated by glasses or contacts?

# Why do our local National Guard members have Lasik just before or after they are posted?





It's easy to see why firemen have  
LASIK.

Ask policeman why they have  
LASIK?





# Do glasses give us normal vision?



Do glasses interfere with our play  
or work ?

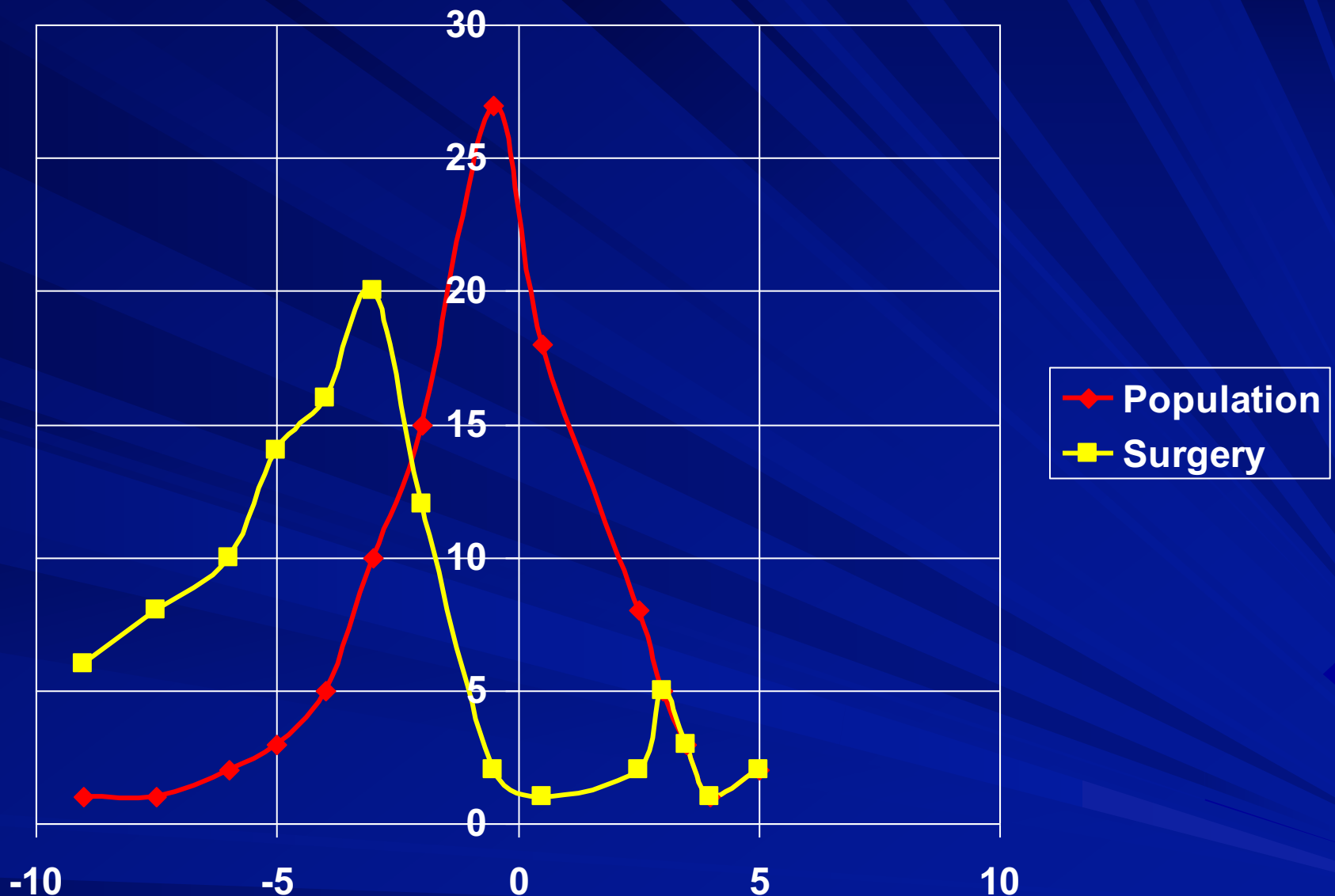


# What happens when sand or smoke gets under our contacts?

and we forgot to bring our glasses!

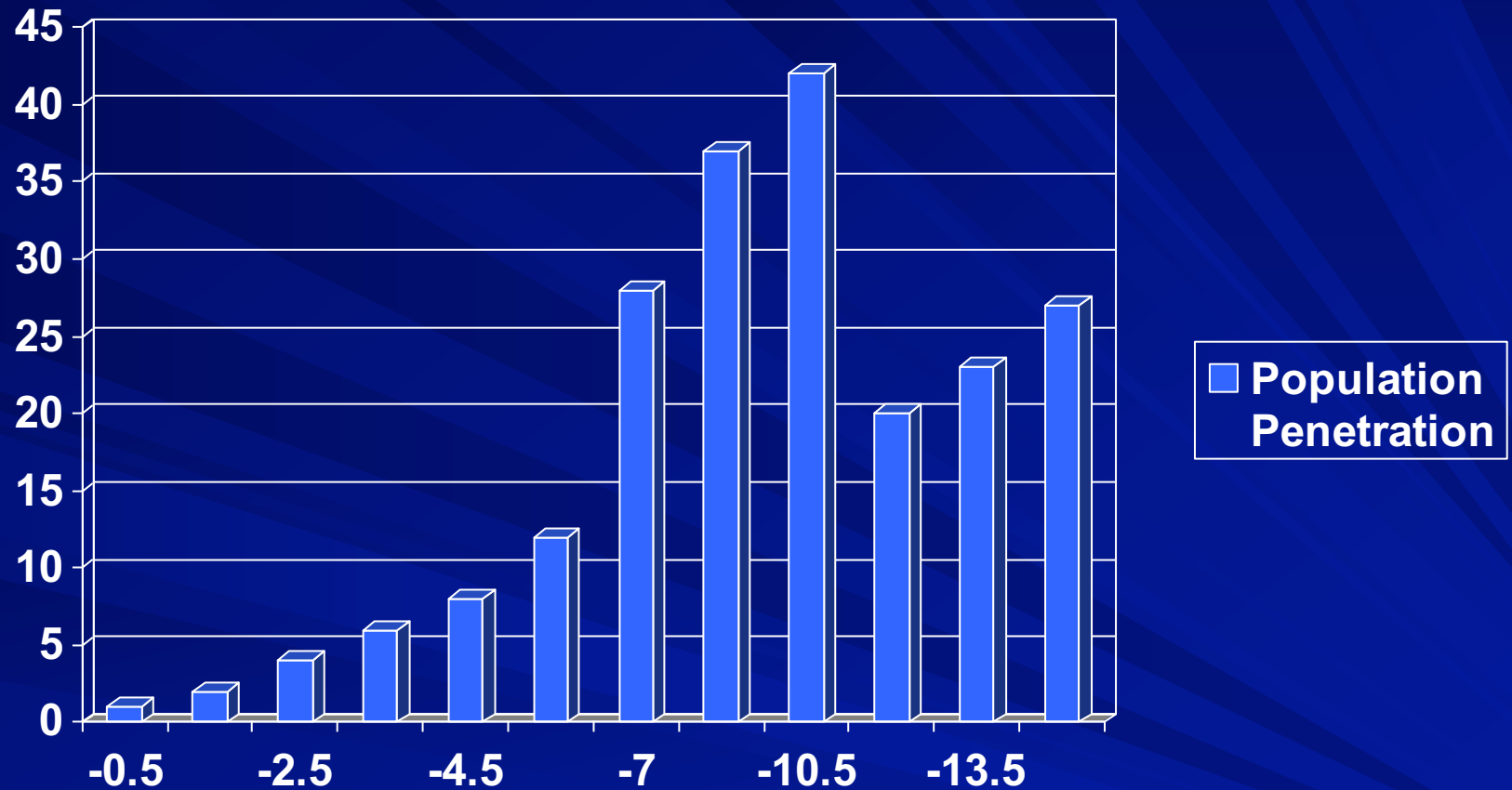






**Patients with high myopia seek out refractive surgery in numbers disproportionate to their representation in the general population**

Figure: Richard L Lindstrom MD



**Twelve to 40% of patients with myopia in the higher ranges undergo surgery compared with 5% to 10% of patients with moderate myopia and less than 5% of patients with low myopia**

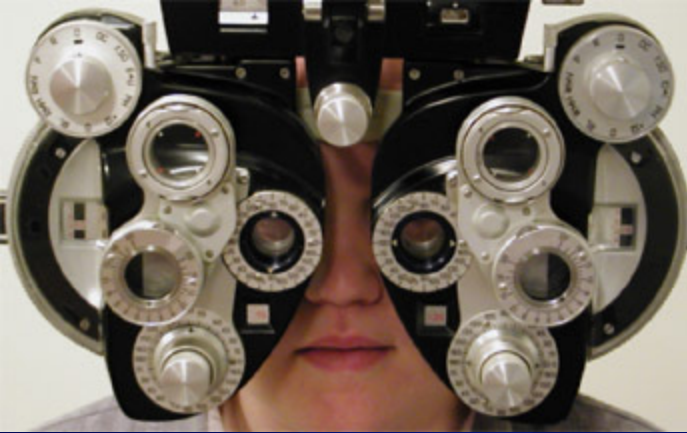
Figure: Richard L Lindstrom MD


## Question 2

- Given that the intent of the law is to make prescription lens, prescriptions, and prosthetic devices more affordable, is the FDA excimer laser system substantially equivalent?



# Measure Prescribe Dispense



 **STATE OF TEXAS**  
DEPARTMENT OF HEALTH  
DIVISION OF PROFESSIONAL REGULATION  
OPTOMETRISTS

**SPECTACLE PRESCRIPTION ONLY**

FOR David Smith DATE 3 OCT 94

ADDRESS \_\_\_\_\_

Rx		SPHERICAL	CYLINDRICAL	AXIS	PRISM	BASE
D.V.	O.D.	-3.25	-0.25	130		
	O.S.	+0.50	-1.00	80		
N.V.	O.D.	+2.00	add			
	O.S.	+2.00				

REMARKS \_\_\_\_\_ P.D. 72/60

DATE OF EXAM 3 OCT 94 EXPIRATION DATE 3 OCT 95

DR. David Smith LIC. # 1234



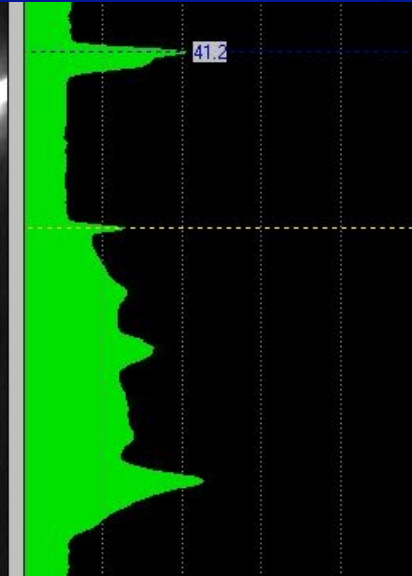
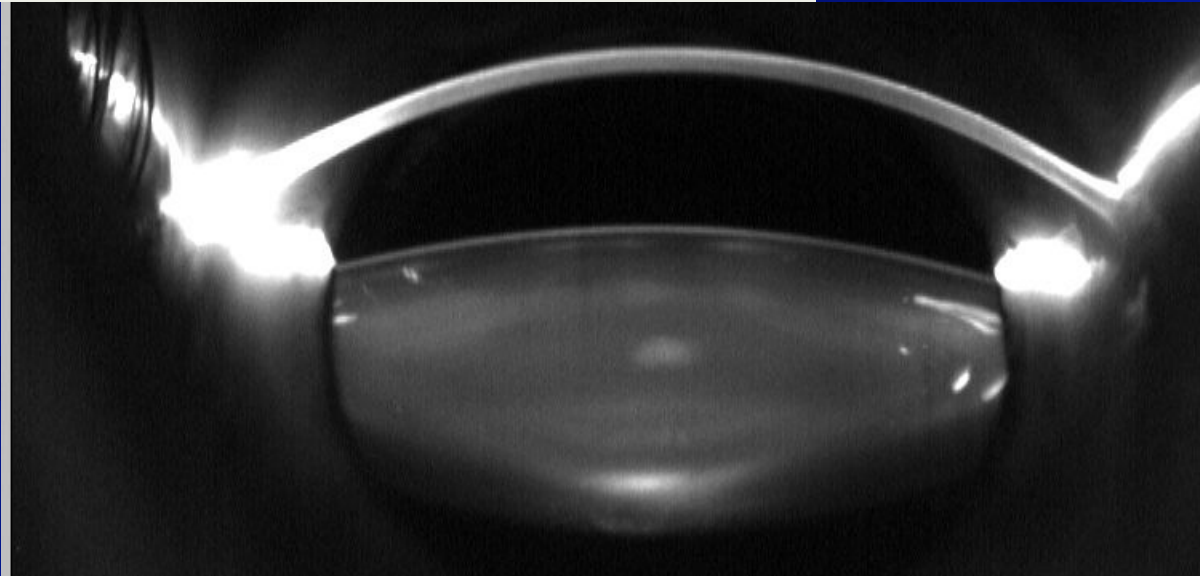
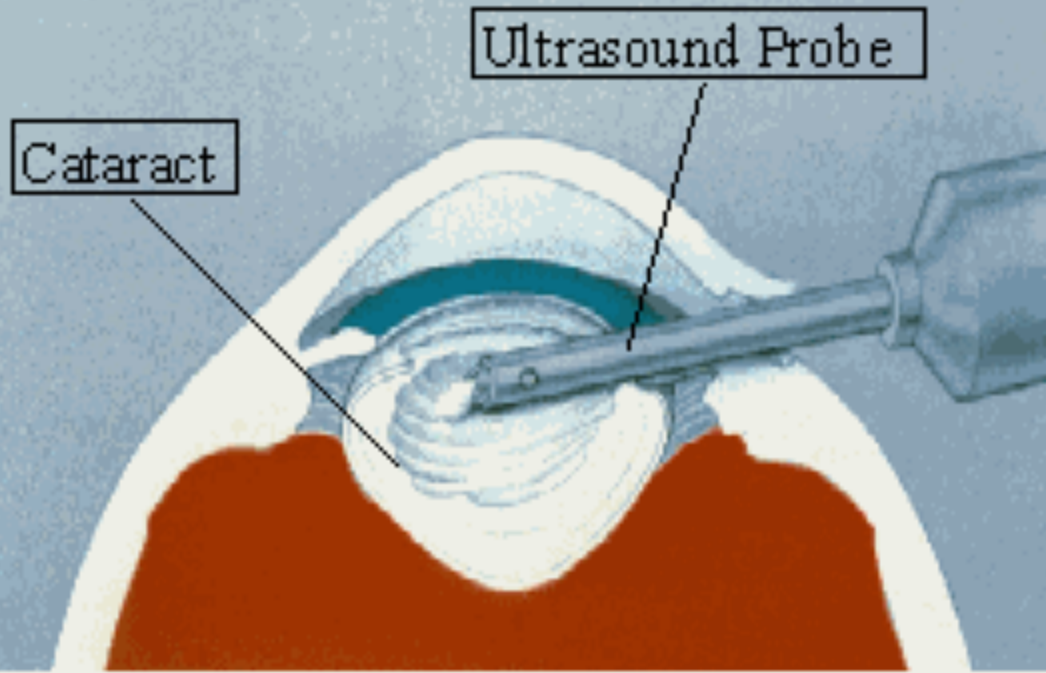
# Measure, Prescribe, Dispense



VERTEX TORIC (6)			
BC	DIA	PWR	
8.6	14.4	-4.00 / -0.75 x 16	

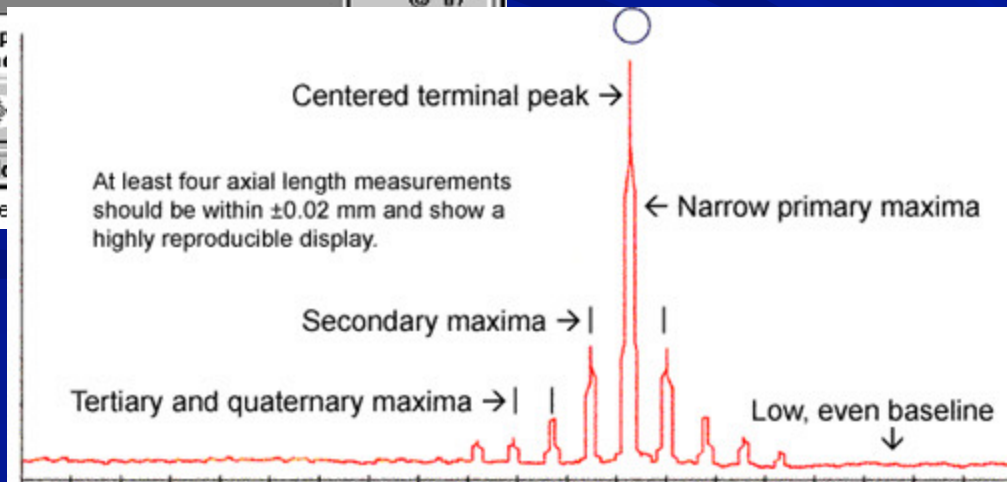
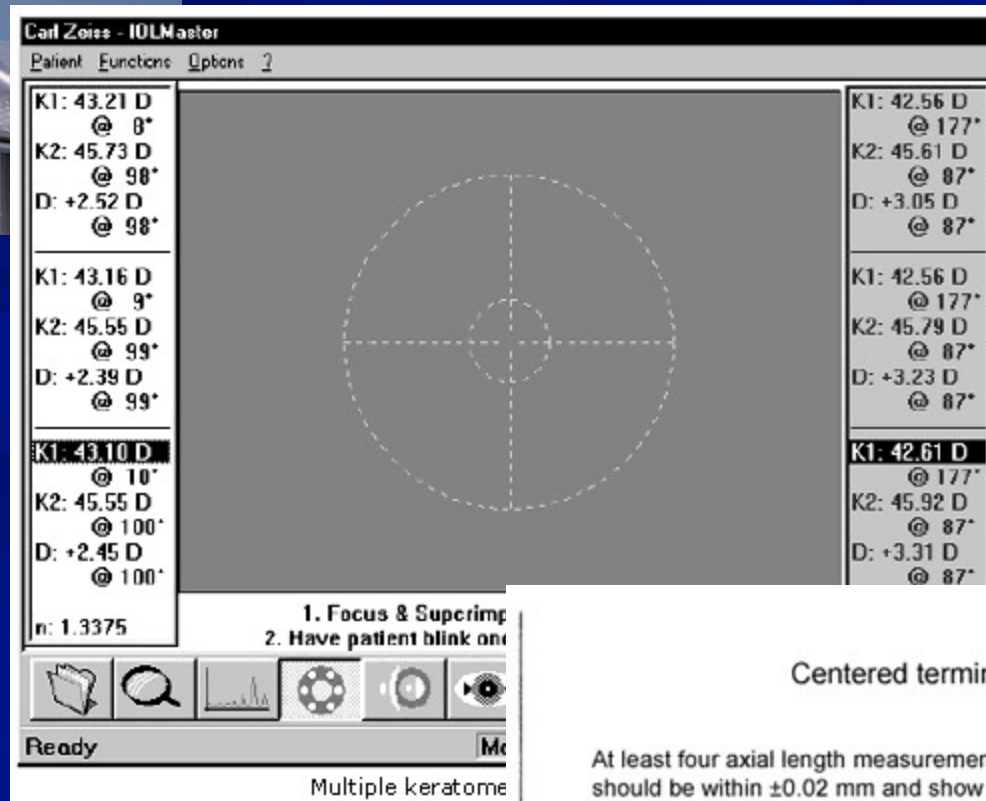


# Cataract





# Cataract: Measurements For an Intraocular lens



# Cataract: Prescription for the Intraocular lens (Hoffer)

## ■ Hoffer Programs Postop Rx RangeAL

21.52 Short: use HoffQ  
K1 44.50 K2 43.75 44.2, OK

TrgRx 0

**IOL** Alcon IOL **SAVE CLR SRK/T A**

Con 118.00 25.73

Holladay 1 SF 1.22 26.10

HofferQ ACD 4.97 26.34

26.0 (avg = 26.06)

**CALCULATE See**

**Range**IOL SRK/T Holl HoffQ

28.0 -1.73 -1.42 -1.23

27.5 -1.34 -1.04 -0.85

27.0 -0.96 -0.67 -0.48

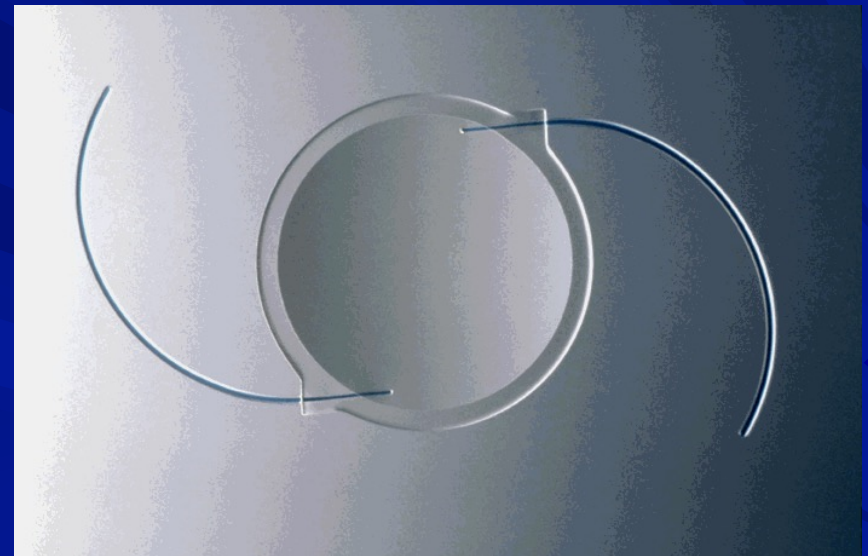
26.5 -0.58 -0.29 -0.11

26.0 -0.20 0.08 0.25

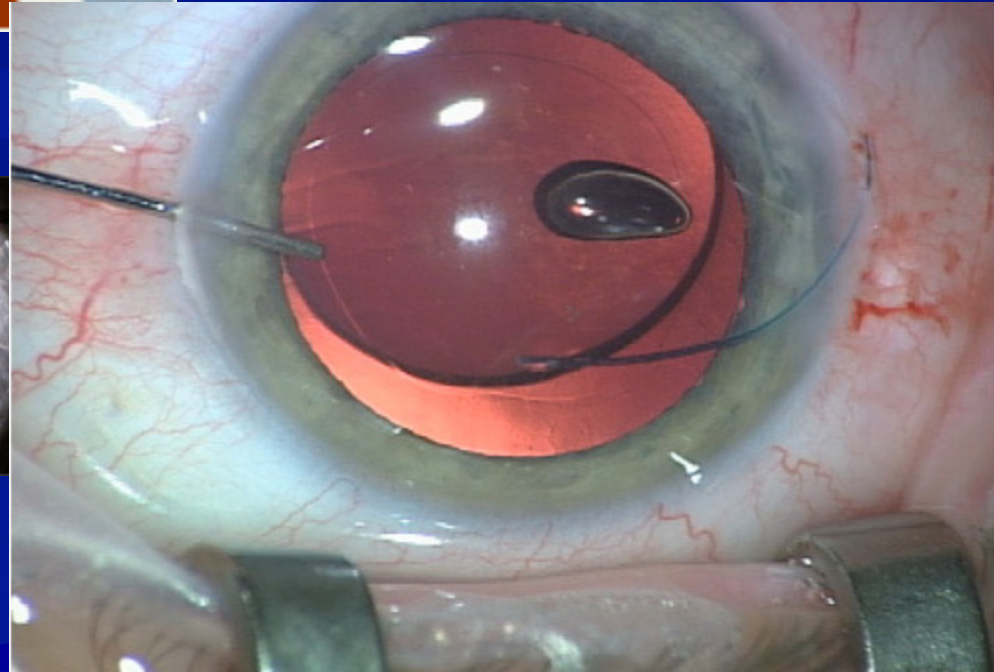
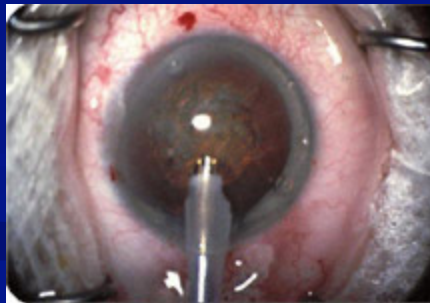
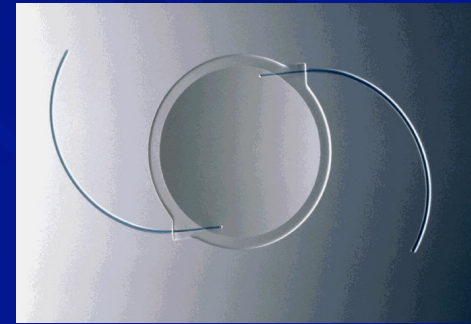
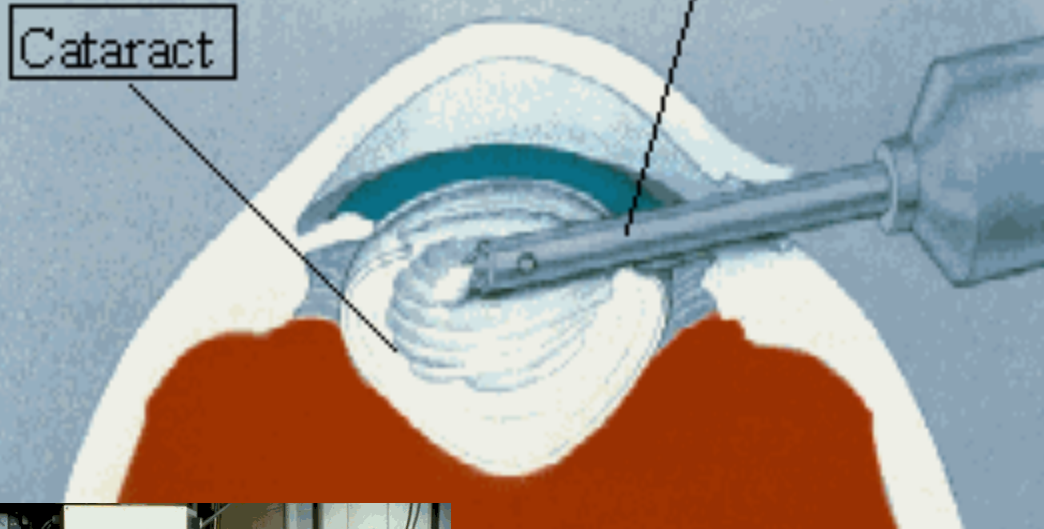
25.5 0.17 0.44 0.61

25.0 0.54 0.80 0.97

**OK**Left: The main calculation screen using the HofferQ, Holladay 1 and SRK/T formulas. Right: This screen shows refractive results of different IOL powers.



# Cataract surgery: Implanting a prosthetic lens





# Lasik: Measure



# Lasik Prescription

**OS** +1.12 DS -0.87 DC x 99° @12.5 mm (4.0 Rx Calc)  
 -02-Sep-2005 12:26:43 W.F. Diam (mm): 6.25 High Order: 11.7 %  
 Eff. Blur (D): 1.04 Rms Err.(μ): 1.47 Quality: ✓✓✓✓

Manifest: +0.69 DS -0.38 DC x 86° @ 12.50 mm

Cycloplegic:

Auto:

Auto+Cyclo: ✓

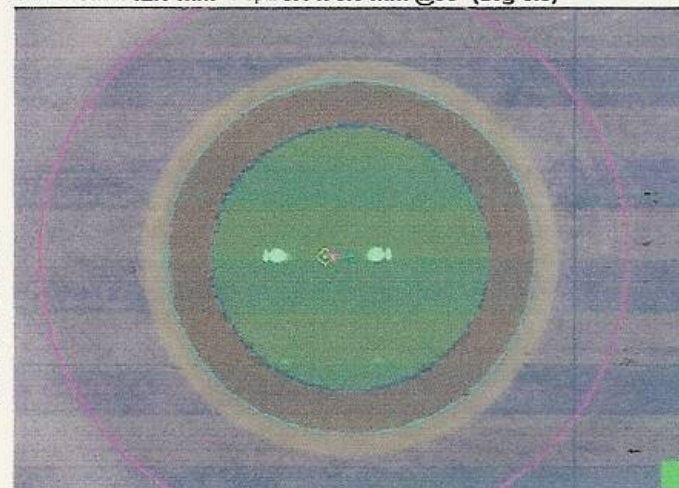
K1 (D): 43.60 K2 (D): 44.23 K2 Axis(°): 109

Corneal Thickness (μ): 474

Scotopic Pupil Size (mm): 6.00

Treatment Type: **LASIK** Correction Type: **CustomVue** Nomogram Change: **+0%**  
 Physician Adjustments - SPH (D): **+0.00** CYL (D): **+0.00** Axis(°): VTX(mm): **0.00**  
 Total Correction - SPH (D): **+1.14** CYL (D): **-0.89** Axis(°): **99** VTX(mm): **0.00**

Limbus Diam: 12.8 mm Pupil: 8.1 x 8.0 mm @93° (avg 8.0)



## Treatment Parameters

Optical Zone (mm): 6.00

Ablation Zone (mm): 9.00

Max. Ablation Depth (μ): 14.7

No. of Tissue Pulses: 245

Treatment Time (sec): 12

## Surgical Parameters

Flap Diameter (mm): 9.50

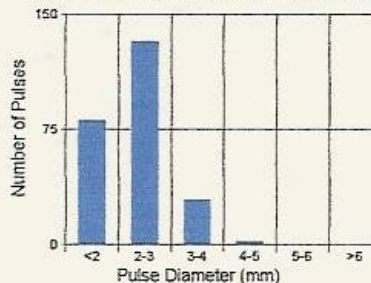
Flap Thickness (μ): 140

Residual Bed Depth (μ): 319

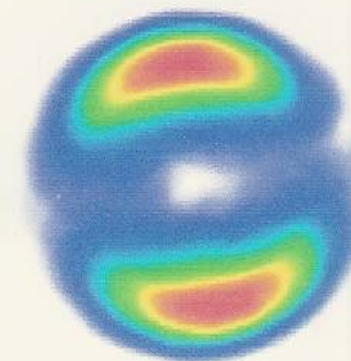
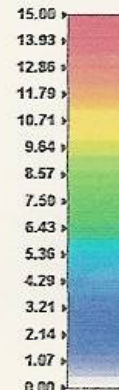
## Additional Information

The Manifest and WaveScan refractions do not match

## Distribution of VSS Pulse Diameters



## Ablation Depth (microns)



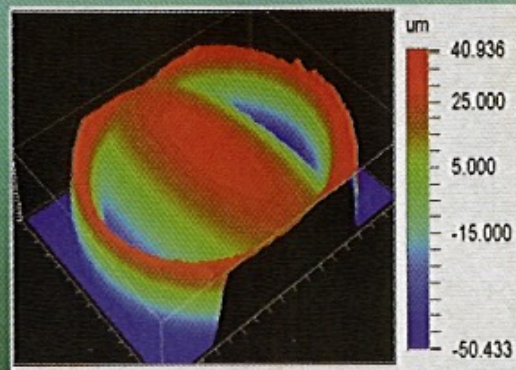
*KGm*



# Lasik: Make Trial Lens (optional)

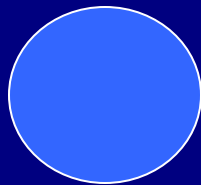


*P5045 Disc for Compound Hyperopic Astigmatism  
+5.00D Sphere -4.5D Cylinder*

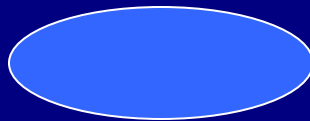




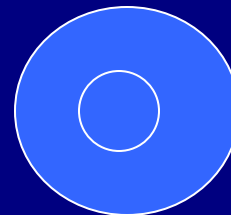
Laser calibration: Standard lens that are verified with a lensometer to assure that the laser is working properly, prior to any patient treatment



-4.00 sphere



-4.00 cylinder



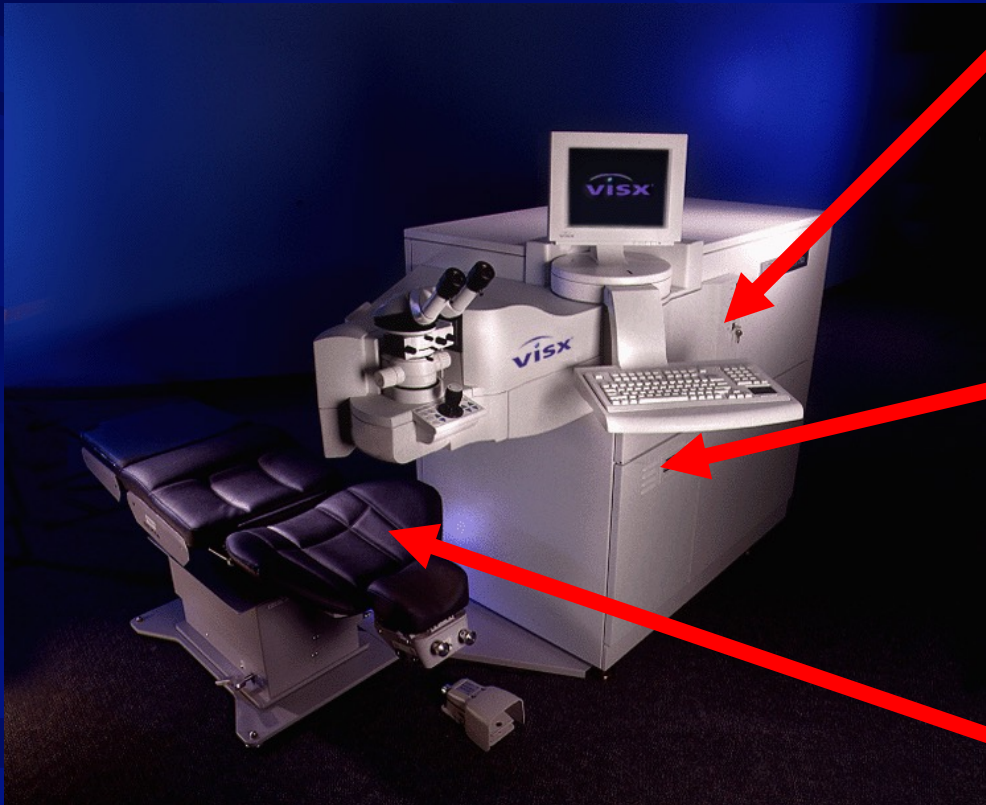
+2.00 sphere

# Lasik: Preparing for surgery

1. Enter  
VisionKey  
Card

2. Enter  
prescription

3. Location  
Photons Will  
Be Delivered



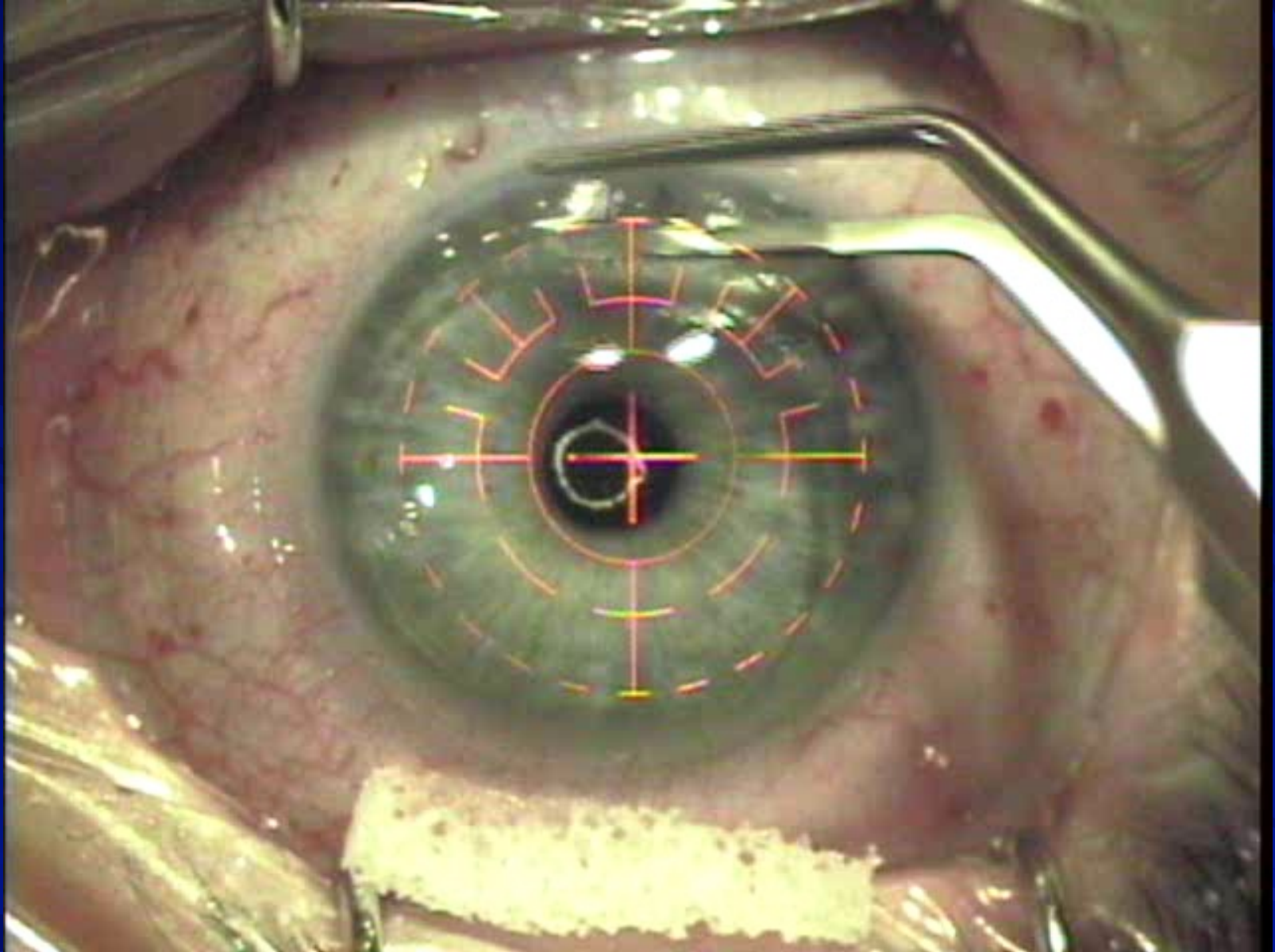
# Lasik: Direct the photons into the eye



NEBRASKA LASER EYE™  
ASSOCIATES

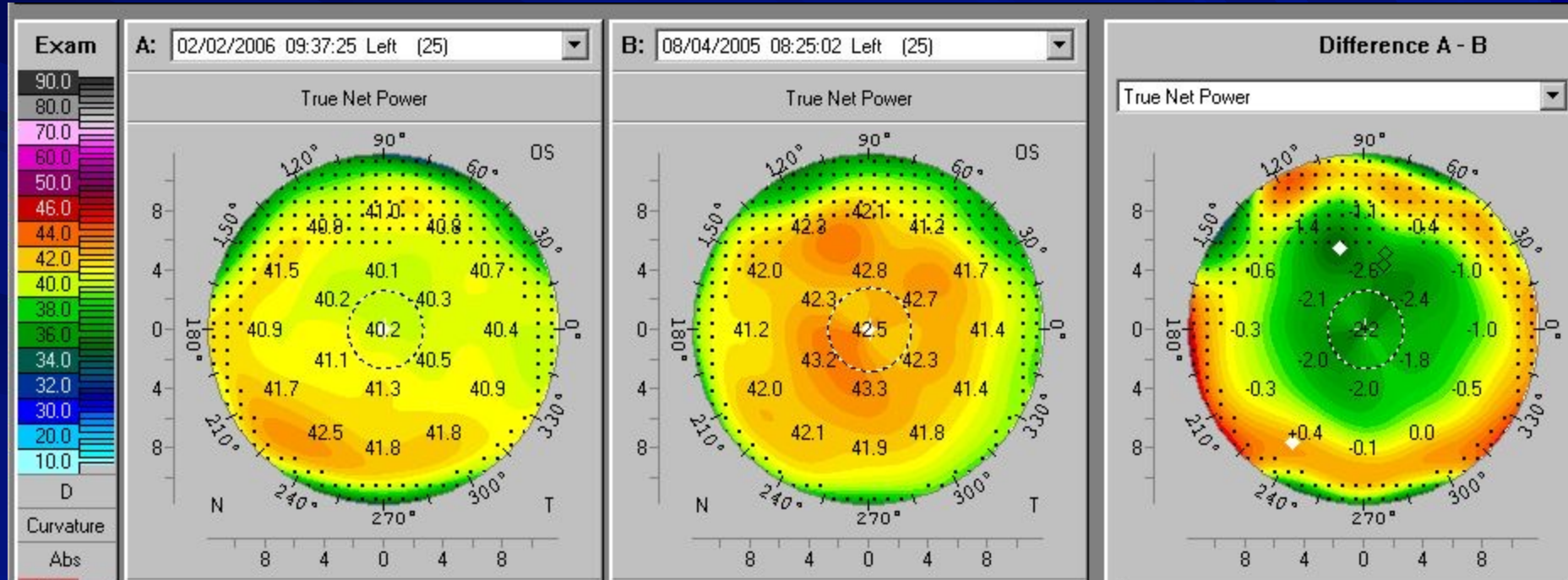






Surgeon supervises/directs the delivery of the prescription lens prosthetic device (photons) into the eye

# Pre-op minus Post-op = Lasik lens



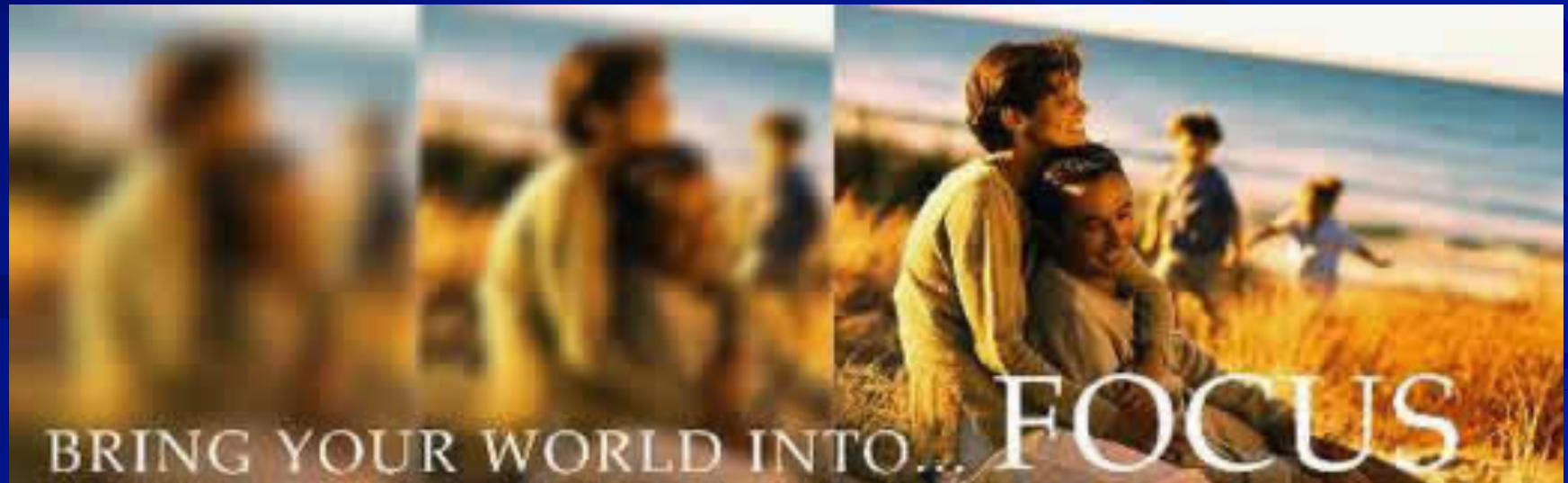
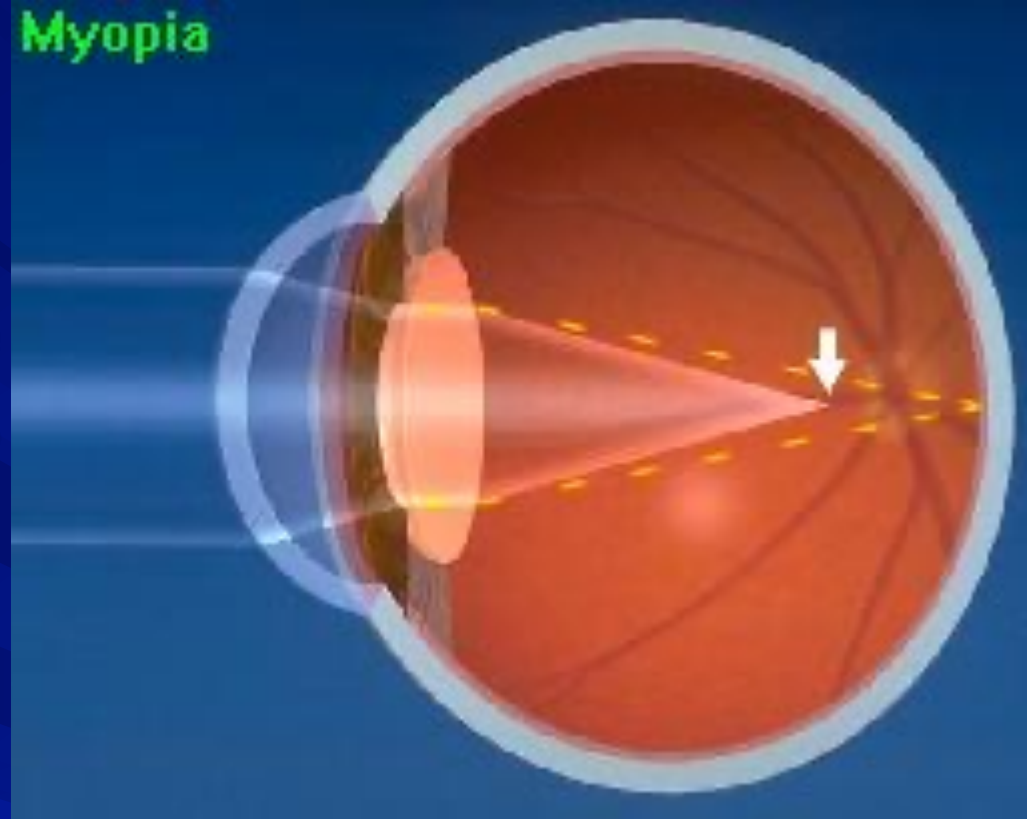
# FDA Excimer Laser System

- FDA “Prescription” Device
- Corrects refractive error: “a lens”
- A “Prosthetic Device” that dispenses ultraviolet photons into the cornea to reshape or wear (by photodegradation) the deformed eye into the correct shape



## Myopia

- Lasik uses ultraviolet photodegradation (wear) to reshape the eye and bring objects into focus



# FDA Excimer Laser System Regulations (Prescription Device)

- The manufacturer has control of the device
  - The Manufacturer controls the VisionKey card which activates the device
  - The manufacturer delivers the requested prescription to the surgeon , when the surgeon requests the delivery, into an agreed location (focal plane)
  - The surgeon is prohibited by the FDA from “opening” the device
- The physician can
  - Writes the prescription for the treatment
  - On the patient’s behalf, pays the device manufacturer on a per treatment basis
  - Dispenses the treatment into the proper location in the eye
- The patient
  - is the consumer of the prescription device (photons)

# CONCLUSION

- The assessed charge is a payment to an FDA approved service provider for Dispensing a proton Prescription, which is Consumed in the patient's eye.