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Pacific University College of Optometry
 Coeur d'Alene Continuing Education
 April 15 & 16, 2016
 Coeur d'Alene Resort, Idaho
 COPE EVENT 111082

Date	Speaker	Title	COPE	Certification
Friday, 4/15/16	Mark Andre, COT	A Comprehensive System for Managing Your Keratoconus Patients with Contact Lenses (2 hrs) <i>Pages 2 - 27</i> <i>1:00pm - 3:00pm</i>	37760 CL	1 hour
	Dina Erickson, OD	Ocular Manifestations of Obstructive Sleep Apnea (1 hr) <i>pages 28 - 30</i> <i>3:00 pm - 4:00 pm</i>	46390 SD	1 hour Therapeutic
	Fraser Horn, OD	Mental Health Considerations for the Optometrist (1 hr) <i>Pages 31 - 48</i> <i>4:00 pm - 5:00 pm</i>	48689 GO	1 hour
	Dina Erickson, OD	Role of Nutrition in the Primary Care Practice (1 hr) <i>pages 49 - 53</i> <i>5:00 pm - 6:00 pm</i>	48803 SD	1 hour Therapeutic

Our thanks to the *Martin Laderman, OD'55, Endowment* and Coopervision for supporting this CE program.

Therapeutic Hours: PS, PH, AS, SD, PD

TOTAL HOURS ATTENDED: _____

Name _____ License # _____

Mailing Address _____

City/ST/ZIP _____



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Saturday 4/16/16	Dina Erickson, OD	Posterior Segment Rounds (1 hr) <i>Pages 54- 58</i> 8:00 am – 9:00 am	48804 PS	1 hour Therapeutic
	Mark Andre, COT	Strategies for Improving Your Success with Multifocal Soft Contact Lenses (1 hr) <i>Pages 59 - 68</i> 9:00 am – 10:00 am	41353 CL	1 hour
	Valerie Kitamori, OD, John Creger, OD Megan Szarkowski, OD	Clinical Cases from Spokane VA Medical Center (1 hr) <i>Pages 69 - 75</i> 10:00 am – 11:00 am	48676 PS	1 hour Therapeutic
	Fraser Horn, OD	Concussion and What You Should Know (1 hr) <i>Pages 76 - 87</i> 11:00 am – 12:00 pm	48698 GO	1 hour
	Fraser Horn, OD	5 Keys to Sports Vision in Primary Care Optometry (1 hr) <i>Pages 88 - 103</i> 12:00 pm – 1:00 pm	45416 FV	1 hour

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MARK ANDRE is an Associate Professor of Optometry at Pacific University where he is a faculty member in the acclaimed contact lens department. Previously, he was the Director of the Contact Lens Service at the Casey Eye Institute on the campus of the Oregon Health and Sciences University. Mark has over 30 years of experience in the field of contact lenses and shares this knowledge at continuing education events around the world. He is a Fellow member of the American Academy of Optometry and the Contact Lens Society of America. He is also a contributing editor for Contact Lens Spectrum. He previously served as chairman of the board for the National Contact Lens Examiners. Professor Andre was honored by the American Academy of

Optometry Cornea and Contact Lens Section as the 2013 Founders Award Recipient.



DINA ERICKSON was recently promoted to the rank of Full Professor at Pacific University College of Optometry. Dr. Erickson received her O.D. from Southern California College of Optometry and completed a residency in Hospital Based Optometry at San Francisco VA Medical Center. She has been with Pacific University since 1998 and currently is the co-instructor in the Ocular Disease and Clinical Procedures courses. She is also teaching "Nutritional Optometry". Dr. Erickson is active in the Portland Metro Optometric Society. In addition to her optometric responsibilities she is a fulltime mom juggling the myriad activities of two high school students.



FRASER HORN is the Associate Dean of Academic Programs at the College of Optometry where he also holds the rank of Associate Professor. After earning his O.D. at Pacific University, he went on to complete a residency in Primary Care and Ocular Disease at Perry Point (Maryland) VA Medical Center. In addition to his administrative responsibilities, Dr. Horn teaches patient communications and sports vision. He is well known for his prowess on the golf course and is a doting dad to two energetic sons. Dr. Horn is also an entertaining speaker, often punctuating his key points in his finest Scottish brogue.

SPOKANE VA OPTOMETRIC RESIDENTS, 2015/2016

JOHN CREGER, OD, is a graduate of Pacific University College of Optometry where he was awarded the William Feinbloom Low Vision Award.

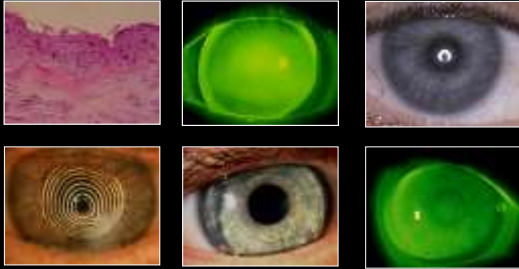
VALERIE KITAMORI, OD, is a graduate of Pacific University College of Optometry. Originally from Hawaii, Dr. Kitamori was a nationally ranked (Division III) golfer while an undergraduate at Pacific.

MEGAN SZARKOWSKI, OD, is a graduate of Michigan College of Optometry. She was the 2014 VSP Practice Excellence Scholarship recipient.

Jeanne Oliver, Course Administrator
jeanne@pacificu.edu



A Comprehensive System for Managing Your Keratoconus Patients with Contact Lenses



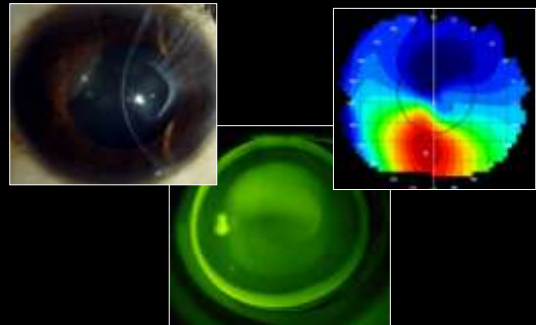
Mark Andre, FAAO
is affiliated with CooperVision, Inc. as a
consultant and speaker.

Of your last 100 irregular corneal fits, what percent of these modalities did you use?

- Small diameter GP 20%
- Intra-Limbal GP (10.5-12.5) 13%
- Scleral GP 44%
- Hybrid 8%
- Piggyback 6%
- Soft Lens 9%

Ed Bennett survey of 50 GPLI Advisory Board members (2014)

Our Preliminary Discussion with the Keratoconus Patient



Discuss the plan with your patient.

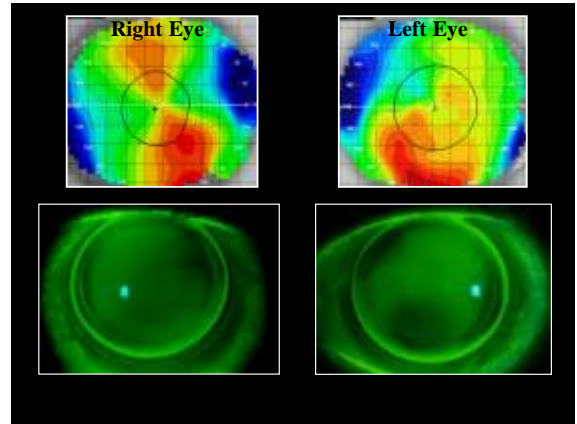
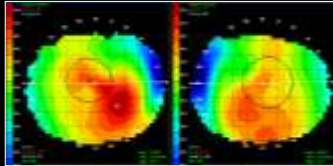
A. Spectacles

Discuss the plan with your patient.

- A. Spectacles
- B. Standard GP or SCL

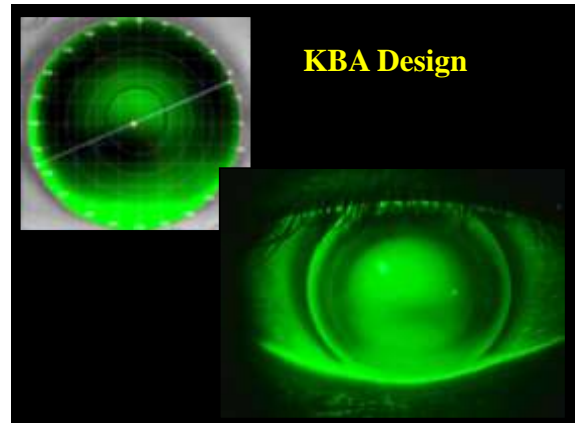
Keratoconus Fruste

- A mild non-progressive form KC
- Can occur anytime throughout life.
- No positive slit lamp findings associated with KC.
- Normal corneal thickness.



Discuss the plan with your patient.

- A. Spectacles
- B. Standard GP or SCL
- C. Special GP design



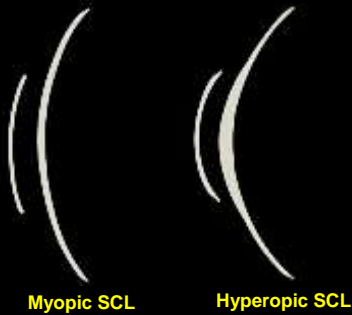
KBA Design

Discuss the plan with your patient.

- A. Spectacles
- B. Standard GP or SCL
- C. Special GP design
- D. Piggyback



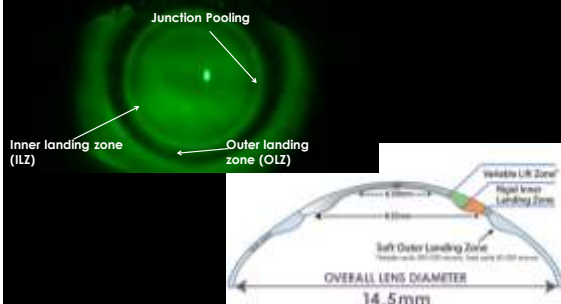
Anterior Curvature of Myopic vs. Hyperopic SCL's



Discuss the plan with your patient.

- A. Spectacles
- B. Standard GP or SCL
- C. Special GP design
- D. Piggyback
- E. Custom Soft or Hybrid design

Hybrid design – Ideal Fit



Discuss the plan with your patient.

- A. Spectacles
- B. Standard GP or SCL
- C. Special GP design
- D. Piggyback
- E. Custom Soft or Hybrid design
- F. Scleral lens

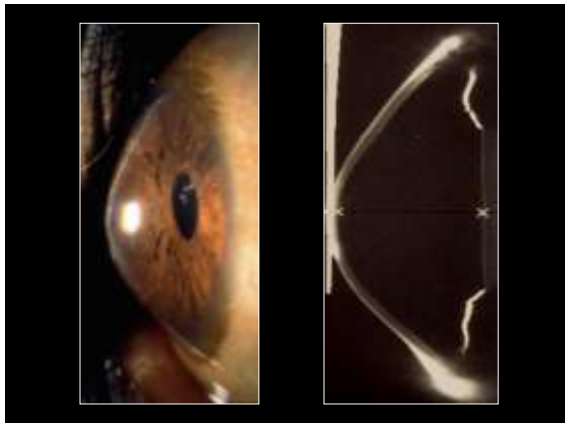
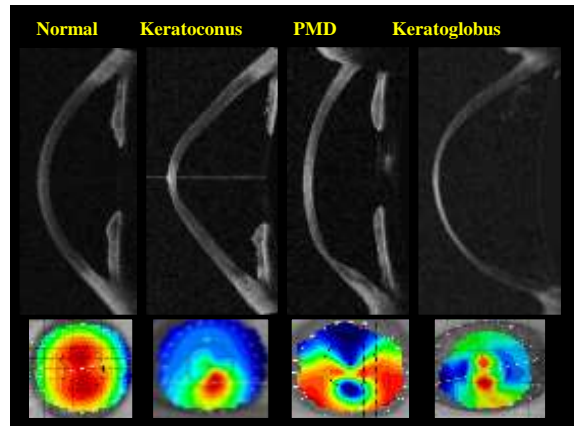
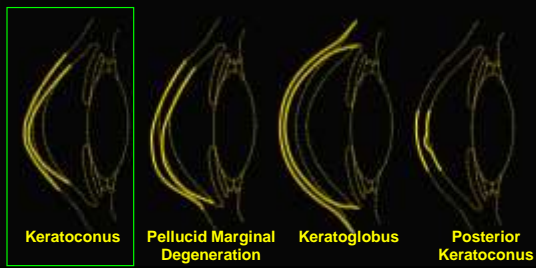
Discuss the plan with your patient.

- A. Spectacles
- B. Standard GP or SCL
- C. Special GP design
- D. Piggyback
- E. Custom Soft or Hybrid design
- F. Scleral lens
- G. Graft

Only 10% of People with KC Undergo Corneal Transplant Surgery



Ectatic Conditions



Keratoconus

Right Eye

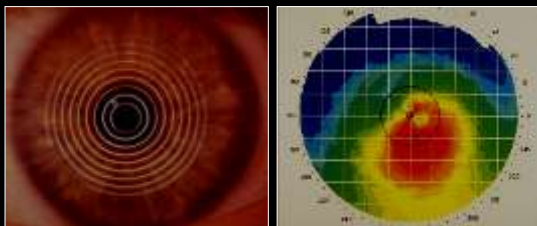
Left Eye



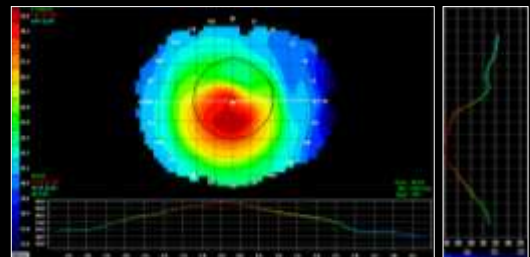
Advanced Keratoconus

Early Keratoconus

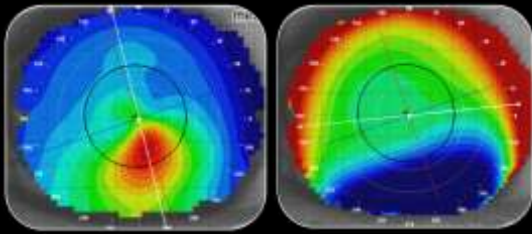
Corneal Topography in Keratoconus



What topographical information is useful for contact lens fitting?



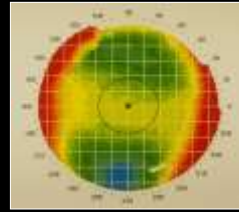
Curvature versus Elevation



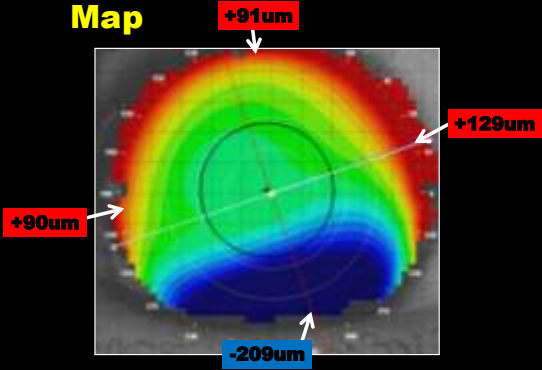
Axial Display
Power Map

Elevation Map
Height Map

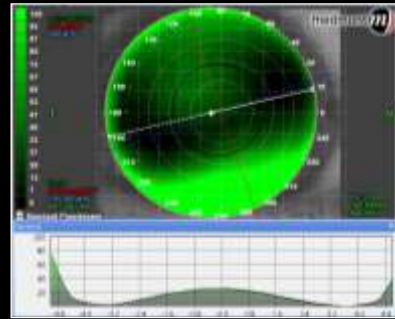
Elevation Display



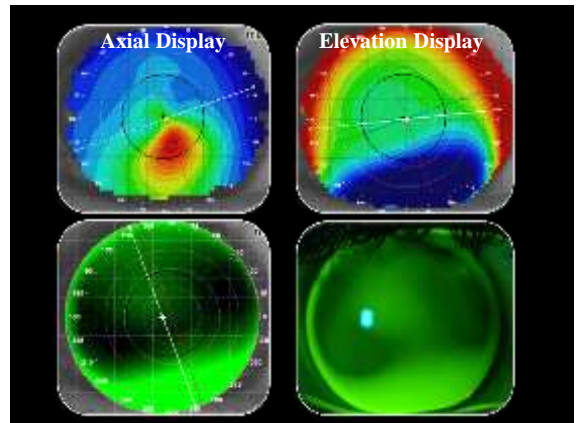
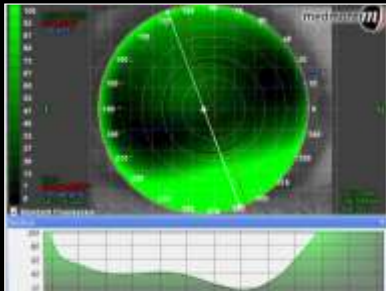
Elevation Map

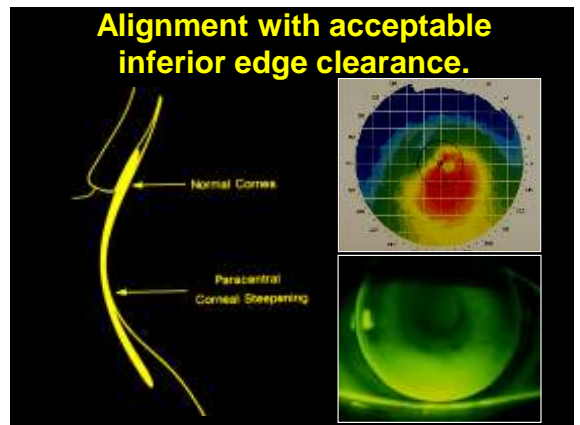
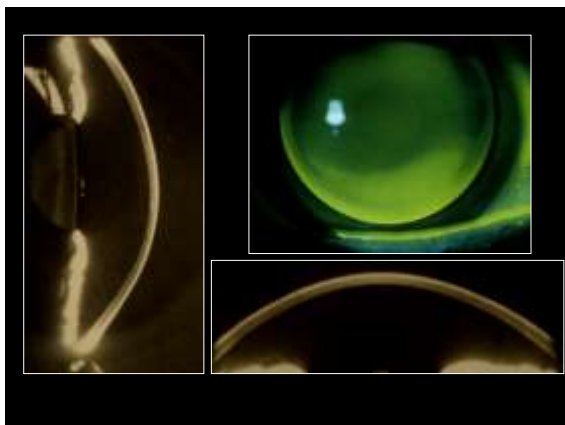
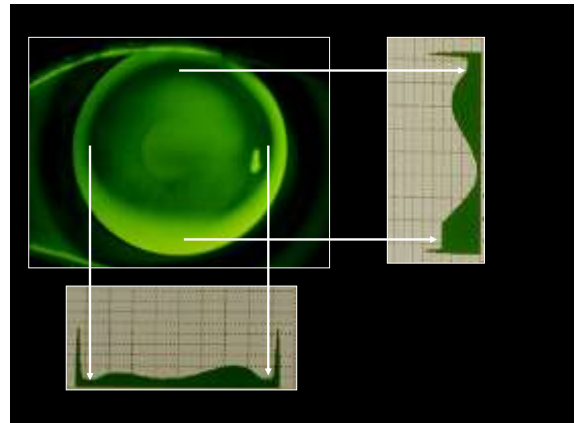
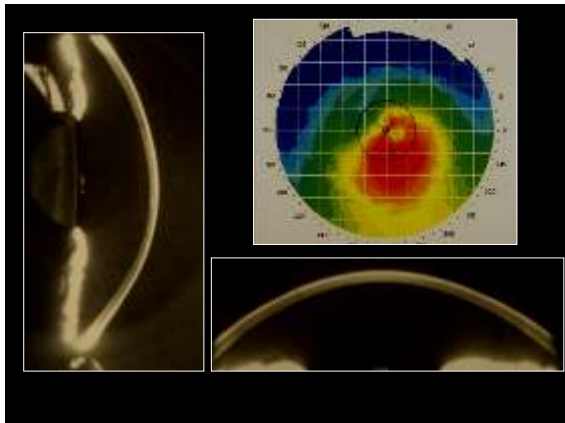
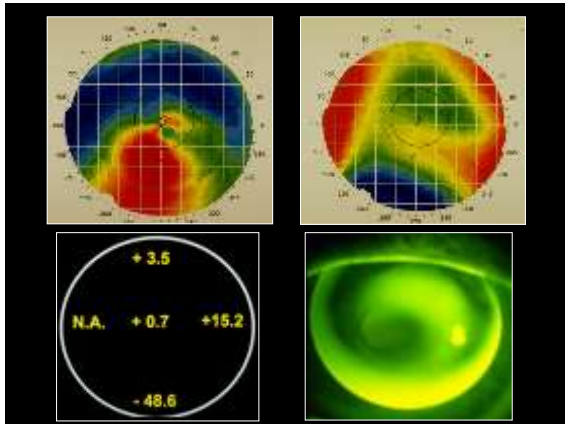


Simulated Aspheric Lens Flat Corneal Meridian

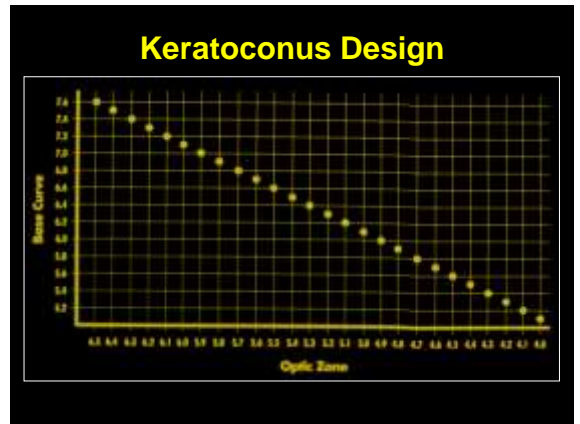
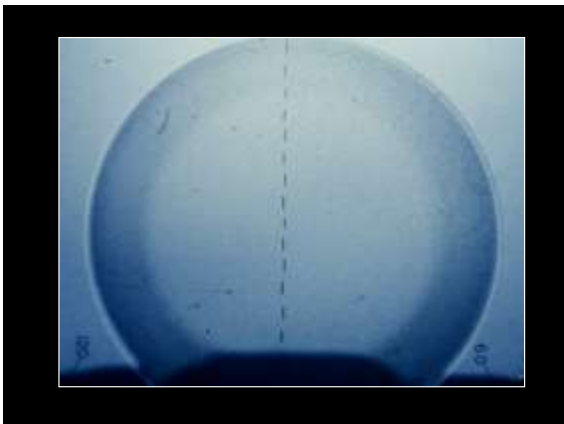
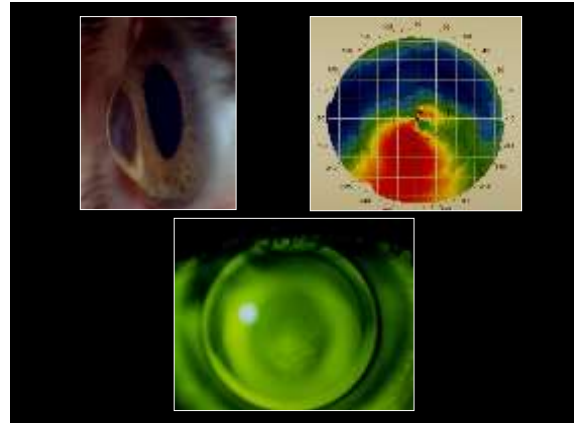
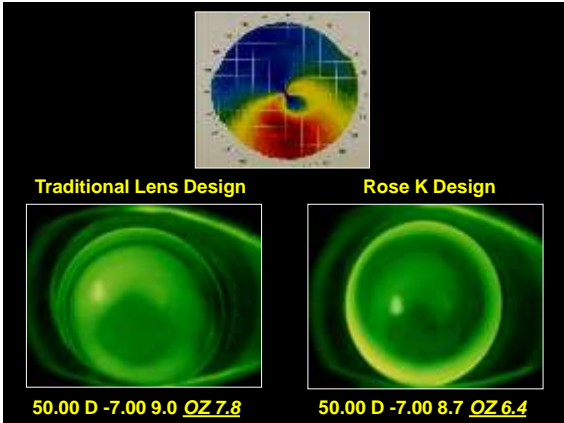
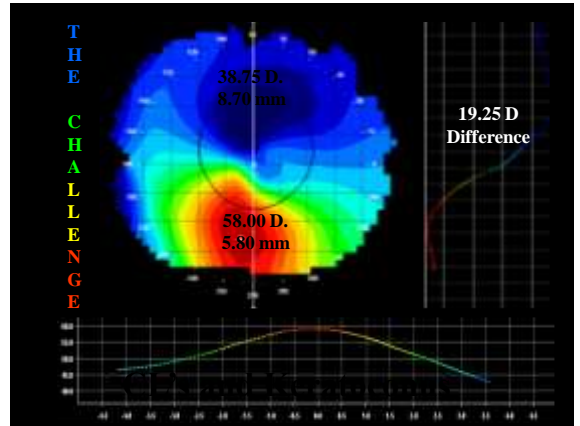
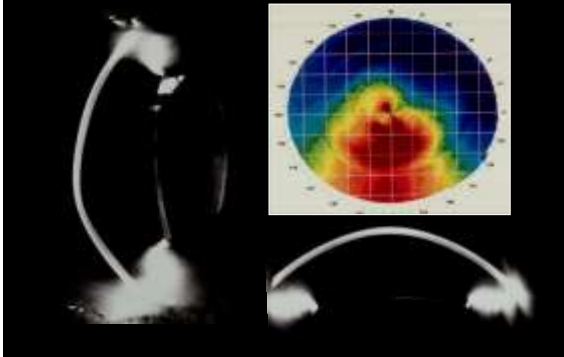


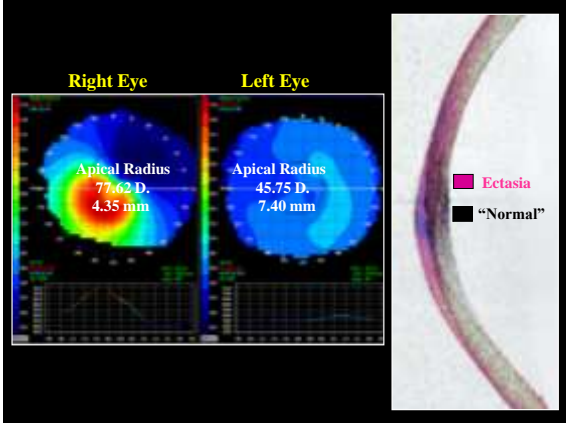
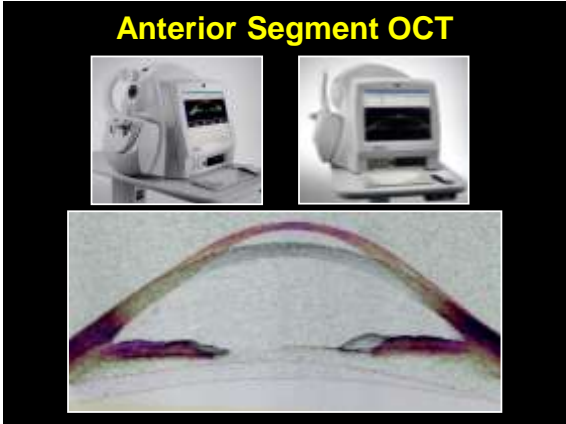
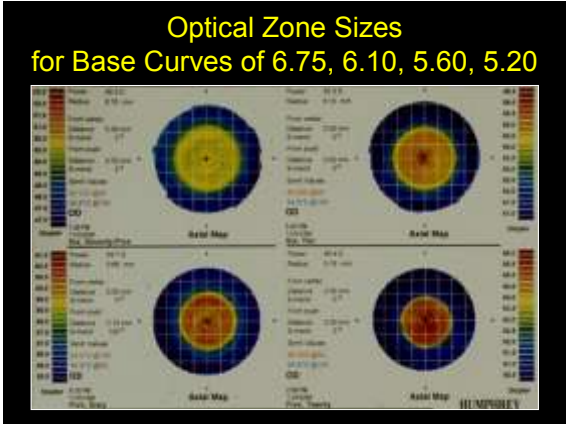
Simulated Aspheric Lens Steep Corneal Meridian





Moderate Keratoconus





Large Diameter Aspheric Design

- Anterior and posterior aspheric design.
- 9.5 to 11.0 mm
- Adjustable periphery
- 14 lens fitting set

Diagnostic Fitting

Initial Base Curve fit on "Steep K" reading

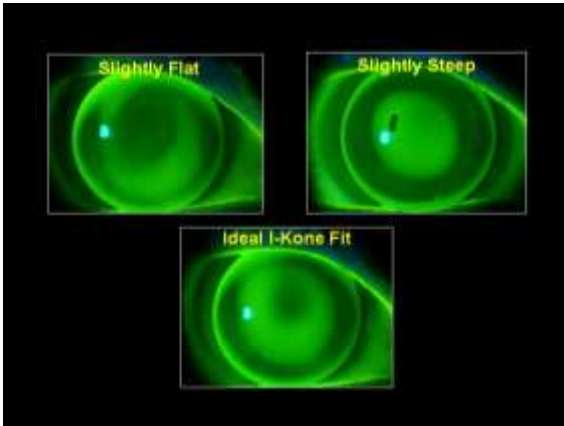
1. centration
2. central clearance

Example:
K's 52.25 / 57.50 @ 45

14 Lens Diagnostic Set

S.C. 44.00	S.C. 50.00	S.C. 56.00	S.C. 62.00	S.C. 68.00
Pos. -6.00	Pos. -6.00	Pos. -12.00	Pos. -18.00	Pos. -24.00
Dia. 9.5	Dia. 9.5	Dia. 9.5	Dia. 9.5	Dia. 9.5
S.C. 44.00	S.C. 52.00	S.C. 60.00	S.C. 68.00	S.C. 76.00
Pos. -7.00	Pos. -10.00	Pos. -14.00	Pos. -17.00	Pos. -20.00
Dia. 9.5	Dia. 9.5	Dia. 9.5	Dia. 9.5	Dia. 9.5
S.C. 48.00	S.C. 54.00	S.C. 60.00	S.C. 66.00	S.C. 72.00
Pos. -8.00	Pos. -11.00	Pos. -15.00	Pos. -19.00	Pos. -23.00
Dia. 9.5	Dia. 9.5	Dia. 9.5	Dia. 9.5	Dia. 9.5

Too Flat **Too Steep**



Advantages of Large Diameter GP Lenses for KC

- Aspheric Optics
 - Controls spherical aberration
 - Reduces lens mass
- Larger Diameter
 - Distributes weight more evenly across corneal surface
 - Reduces glare / halos
 - Improves lens stability

Reverse Geometry Lens Designs for Keratoconus

Advanced Keratoconus

K's 65.50 @ 108 / 71.50 @ 18
5.15 @ 108 / 4.70 @ 18

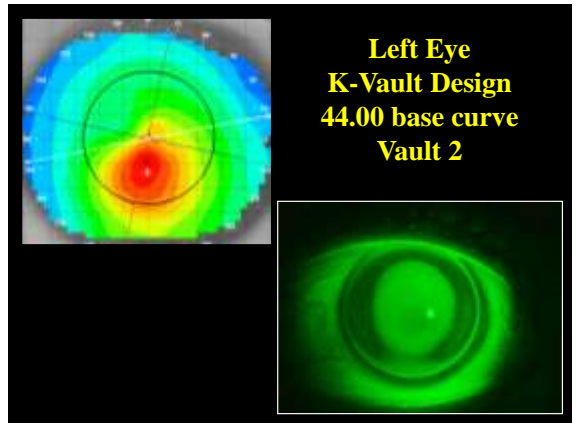
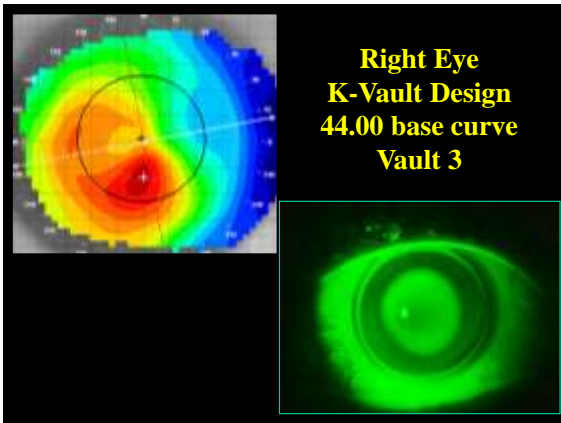
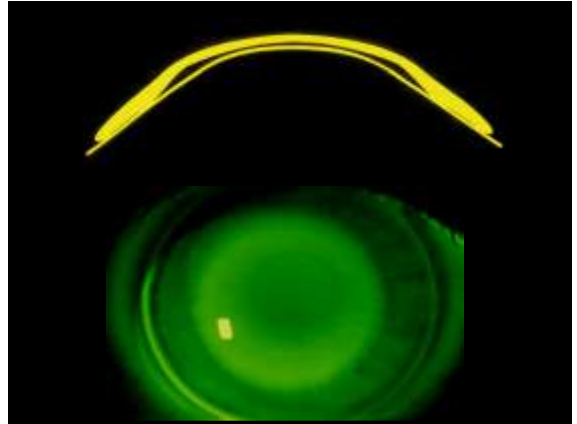
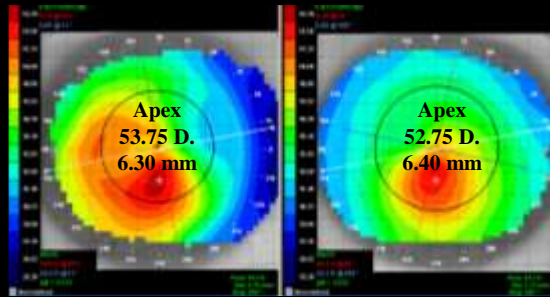
K's 65.50 @ 108 / 71.50 @ 18 (5.15 @ 108 / 4.70 @ 18)

3.55 mm 35.50 D. Flatter than Apical Radius

K-Vault Reverse Geometry Design For Keratoconus

7 Vaults	1 to 7
Base Curve:	44.00 (7.67 mm)
Power:	-4.00 D.
Diameter:	11.0 mm

Patient: KA Keratoconus OU

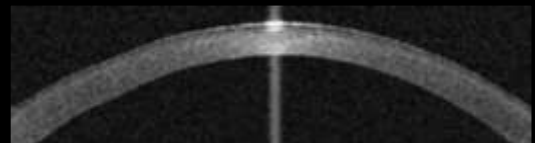


Soft Lenses for Keratoconus

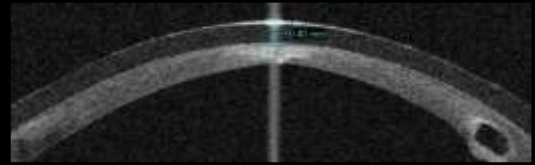
- Piggyback lenses designs
- Soft torics in early KC
- Special geometry soft lens designs
- Hybrid (combination) designs



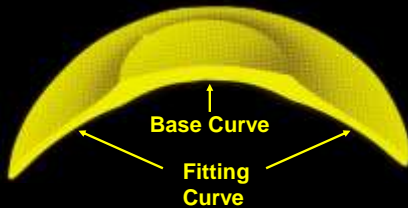
Alcon Night & Day Lens



Custom Soft Keratoconus Design

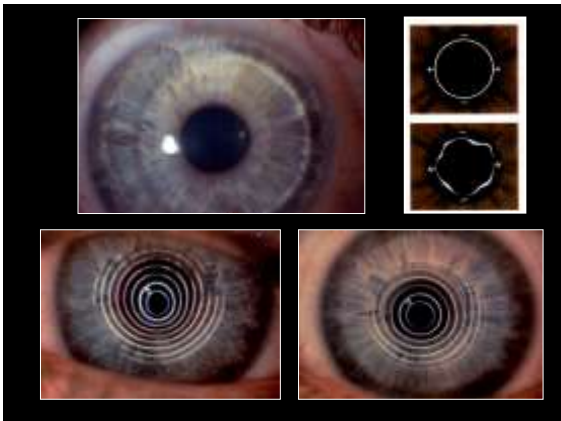


Custom Keratoconus Soft Lens Design



Custom KC Diagnostic Set

Base / Fitting	Power	Diameter
8.5 / 8.9	+2.00	14.8 mm
8.1 / 8.9	Plano	14.8 mm
7.7 / 8.9	-2.00	14.8 mm
7.3 / 8.9	-4.00	14.8 mm
6.9 / 8.6	-6.00	14.8 mm
6.5 / 8.6	-8.00	14.8 mm
6.1 / 8.6	-10.00	14.8 mm
5.7 / 8.6	-12.00	14.8 mm



Custom Soft KC Fitting Guide Base Curve

- Determine "Mean K"
 - Example: 46.00/52.00@135
 - Mean "K" is 49.00 D
- Convert Dioptric power to mm's
 - 49.00 D = 6.89 mm
- Add 1.0 mm to "Mean K"
 - Example: 6.89 + 1.00 = 7.89 mm

KC Soft Lens Fitting Tips

If refitting from a rigid lens...

- One eye at a time
- Refit most needy eye first
- Sphere power only for first lens
- Monitor topographical changes
- Care system?

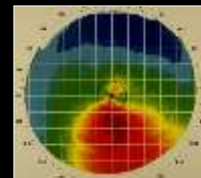
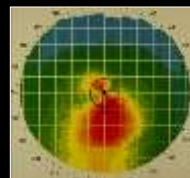


Patient: DM 38 y/o Female

History:

Moderate keratoconus OU,
intolerant to rigid lenses.

K's: OD 49.75 @ 020 / 53.50 @ 110
OS 50.25 @ 175 / 53.00 @ 085




Patient: DM

K's:
 OD 49.75 @ 020 / 53.50 @ 110
 OS 50.25 @ 175 / 53.00 @ 085

Mean K:
 Approx. 51.50 = 6.55 mm

Initial Base Curve:
 6.55 + 1.00 = 7.55 mm

Diagnostic Lens:
 OU 7.7 / 8.9 mm

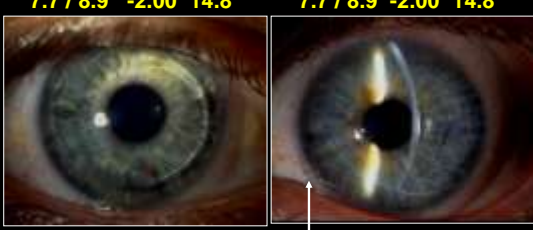


Base / Fitting	Power	Diameter
8.5 / 8.9	+2.00	14.8 mm
8.1 / 8.9	Plano	14.8 mm
7.7 / 8.9	-2.00	14.8 mm
7.3 / 8.9	-4.00	14.8 mm
6.9 / 8.6	-6.00	14.8 mm
6.5 / 8.6	-8.00	14.8 mm
6.1 / 8.6	-10.00	14.8 mm
5.7 / 8.6	-12.00	14.8 mm



Diagnostic Lenses

7.7 / 8.9 -2.00 14.8 7.7 / 8.9 -2.00 14.8



Edge Flouthing

Diagnostic Fitting

OD	Base/Fit Curve	OS
7.7/8.9 mm	7.3/8.9 mm	7.3/8.9 mm
-2.00 D.	Power	-4.00 D.
14.8 mm	Diameter	14.8 mm
0.30 mm	CT	0.30 mm


-2.50 -4.75 x 100 Over Rx -1.00 -2.50 x 90
 20/25 VA 20/25

Patient: DM
Final Lens Order

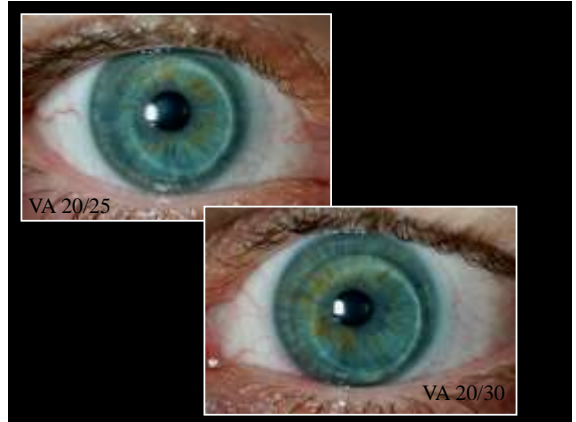
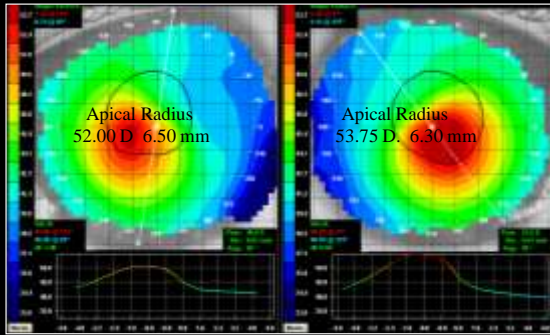
OD	BC	OS
7.7/8.9 mm	7.3/8.9 mm	7.3/8.9 mm
-4.50 -4.25 x 100	Power	-5.00 -2.50 x 90
14.8 mm	Diameter	14.8 mm
20/25	VA	20/25

NovaKone Alden Optical

MATERIAL	Benz G4X 54%, Hioxifilcon D
DIAMETER	15.0 as standard, others available in 0.1 mm steps
BASE CURVE (central)	5.4 and 5.8, 6.2, 6.6, 7.0, 7.4, 7.8, 8.2, 8.6 as standard, others available in 0.1 mm steps
FITTING CURVE (para-central)	8.3, 8.6, 8.9 as standard, others available in 0.1 mm steps
SPHERE POWER	+30.00 to -30.00 in 0.25D steps
CYLINDER POWER	up to -30.00 in 0.25D steps
AXIS	1° to 180° in 1° steps
IT FACTOR* (increased thickness)	0 = standard thickness 1, 2, 3, 4 incrementally thicker for higher levels of irregularity

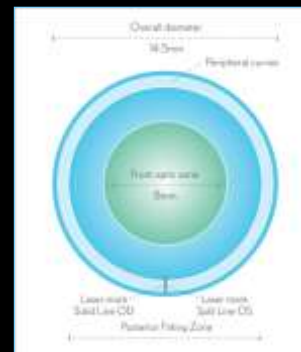


Patient: MA - Keratoconus



Base curve: 7.40mm to 9.40mm (0.20mm steps)
Diameter: 14.5 mm, 14.0 mm, 15.0 mm, 15.5 mm
 (can be manufactured to order)
Power range: Sphere: +20.00D to -20.00D
 Cylinder: -0.50D to -12.00D (in 0.25D steps)
 Axis: 1° to 180° (in 1° steps)
Material: Efofilcon A, 74% Water (Definitive™)
 DK = 60

KeraSoft® IC Design



Diagnostic Set



Base Curve	Diameter	Power	Phase
7.80mm	14.5mm	-3.75	Phase 1
8.20mm	14.5mm	-3.75	Phase 2
8.20mm	14.5mm	-5.75	Phase 1
8.40mm	14.5mm	-3.75	Phase 2
8.40mm	14.5mm	-5.75	Phase 1
8.60mm	14.5mm	-3.75	Phase 2
8.60mm	14.5mm	-5.75	Phase 1
8.80mm	14.5mm	-3.75	Phase 2
8.80mm	14.5mm	-5.75	Phase 1

Fitting Process

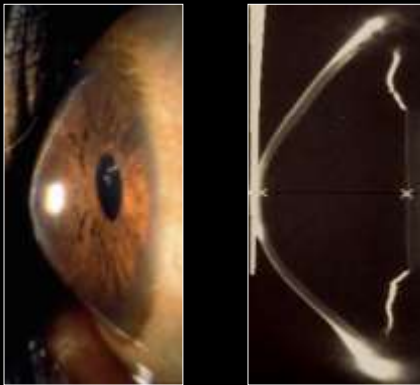
- Observe Corneal Profile
- Identify Corneal Shape
- Choose Initial Lens
- Use Dynamic Assessment Form



Identifying Corneal Shape

Corneal Shape	Surrounds	Normal	PM	PM/Steep	PM/Flat
Normal					
Steep					
Flat					
Irregular					

Non-Surgical
This is a guide to help you identify the corneal shape and choose the appropriate lens design.



Initial Lens Selection

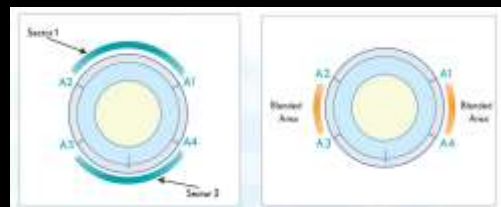
Corneal Shape	Surrounds	PM	PM/Steep	PM/Flat	PM/Asym
Normal					
Steep					
Flat					
Irregular					

KeraSoft® IC Lens Fit Assessment

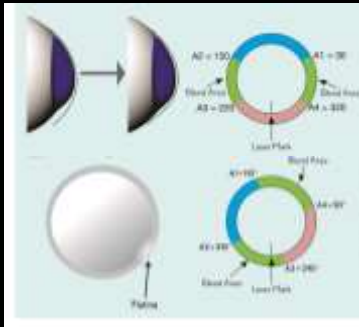
Fit	Good Fit	Marginal	Change the Fit
M	1.00mm - 1.25mm 1.00mm - 1.25mm No or minimal peripheral touch	1.25mm - 1.50mm 1.25mm - 1.50mm Minimal peripheral touch	1.50mm - 1.75mm 1.50mm - 1.75mm Minimal peripheral touch
B	1.25mm - 1.50mm 1.25mm - 1.50mm Minimal peripheral touch	1.50mm - 1.75mm 1.50mm - 1.75mm Minimal peripheral touch	1.75mm - 2.00mm 1.75mm - 2.00mm Minimal peripheral touch
C	1.50mm - 1.75mm 1.50mm - 1.75mm Minimal peripheral touch	1.75mm - 2.00mm 1.75mm - 2.00mm Minimal peripheral touch	2.00mm - 2.25mm 2.00mm - 2.25mm Minimal peripheral touch
Co	2.00mm - 2.25mm 2.00mm - 2.25mm Minimal peripheral touch	2.25mm - 2.50mm 2.25mm - 2.50mm Minimal peripheral touch	2.50mm - 2.75mm 2.50mm - 2.75mm Minimal peripheral touch
VA	2.75mm - 3.00mm 2.75mm - 3.00mm Minimal peripheral touch	3.00mm - 3.25mm 3.00mm - 3.25mm Minimal peripheral touch	3.25mm - 3.50mm 3.25mm - 3.50mm Minimal peripheral touch

Sector Management Control (SMC)

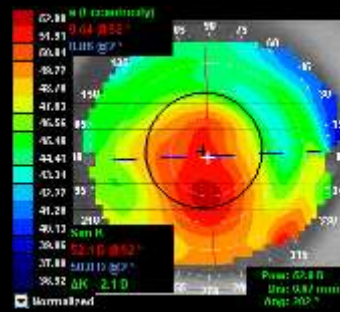
- For more irregular corneas, up to two sectors of the periphery can be modified independently of the base curve and customized to the specification of the practitioner.



Sector Management Control (SMC)



Patient: DG Keratoconus with Intacts - OD only



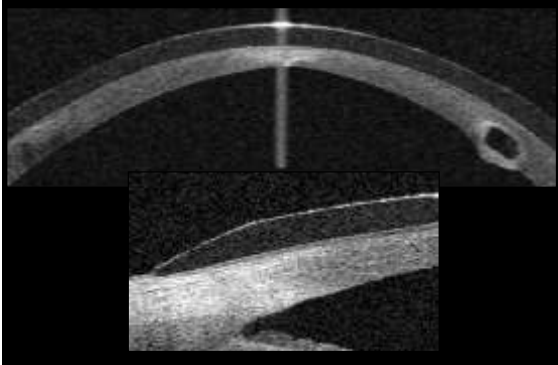
KeraSoft (Bausch + Lomb) Dual Aspheric Design Adjustable (Asymmetric) Periphery

Base Curve	Diameter	Periphery	Power
7.00mm	14.5mm	STD	Plane
8.00mm	14.5mm	STD	Plane
8.20mm	14.5mm	STD	Plane
8.40mm	14.5mm	STD	Plane
8.60mm	14.5mm	STD	Plane
8.80mm	14.5mm	STD	Plane
9.00mm	14.5mm	STD	Plane
9.20mm	14.5mm	F112	Plane
9.40mm	14.5mm	STP2	Plane

8.6 / 14.5 KeraSoft On-Eye



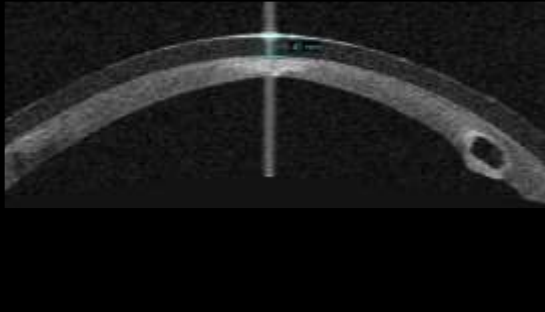
Patient: DG KeraSoft Right Eye



Corneal Thickness: 340 microns

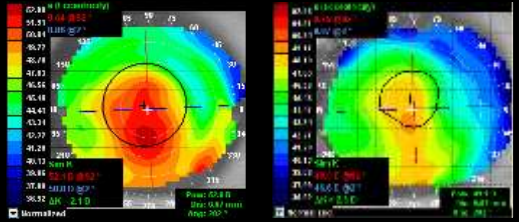


KeraSoft Thickness: 400 microns

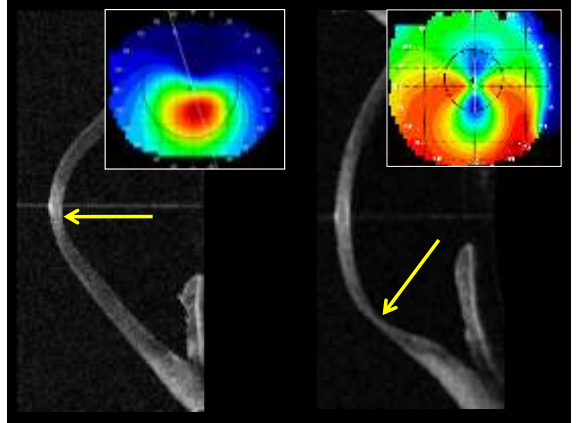
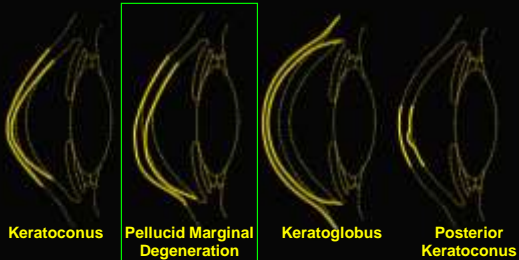


Corneal Mapping over the KeraSoft diagnostic lens on the right eye.

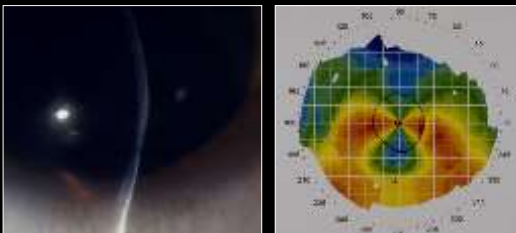
8.6 Plano 14.5
 OR: -2.75 -2.00 x 017 VA: 20/30
 No lens With lens



Ectatic Conditions



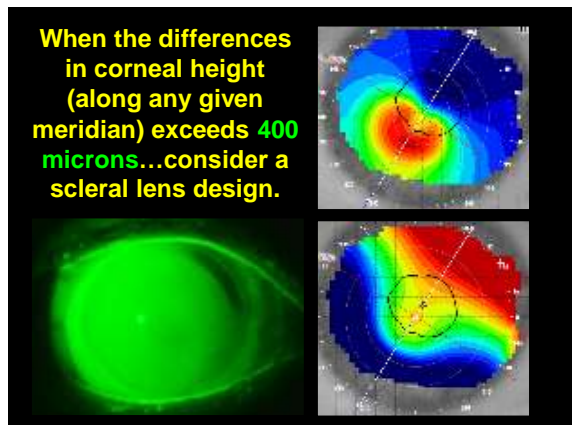
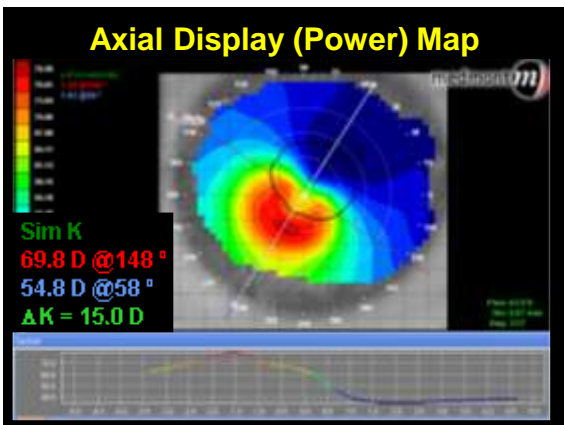
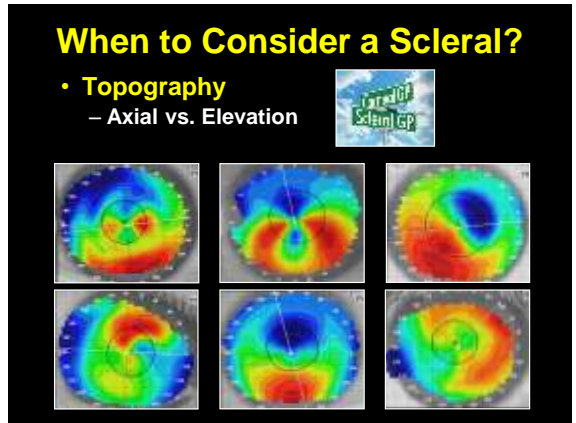
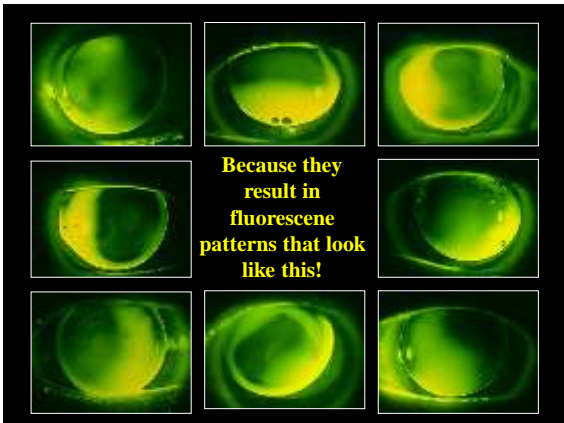
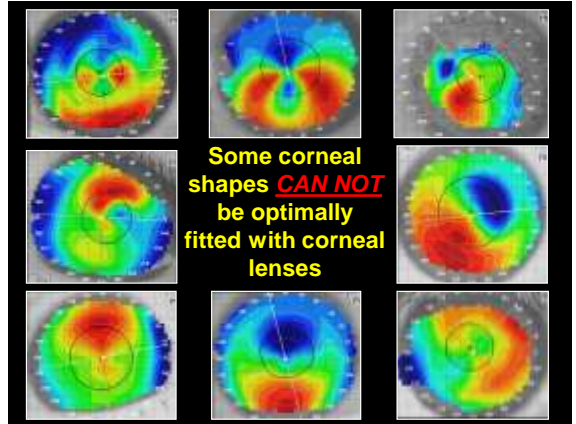
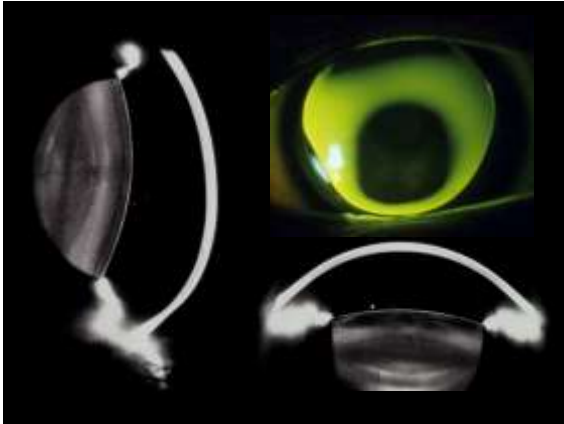
Pellucid Marginal Degeneration

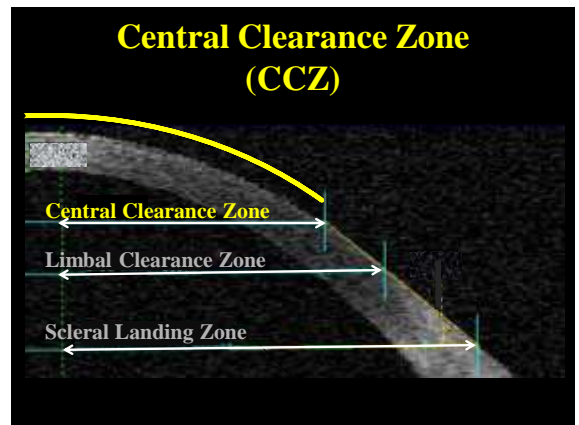
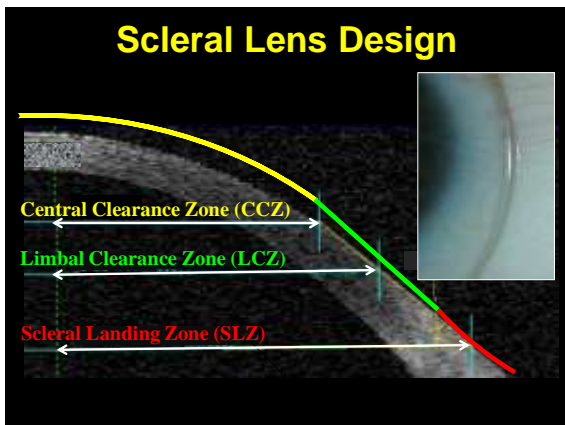
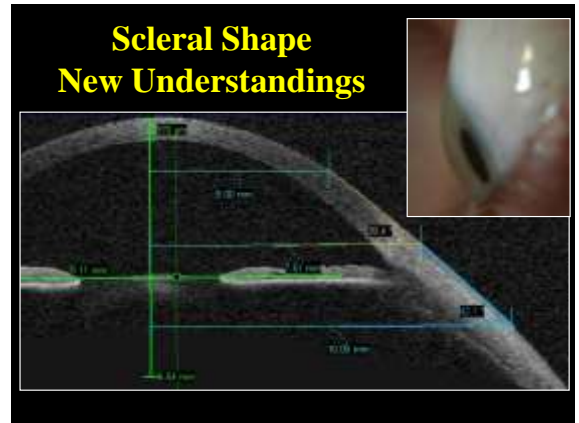
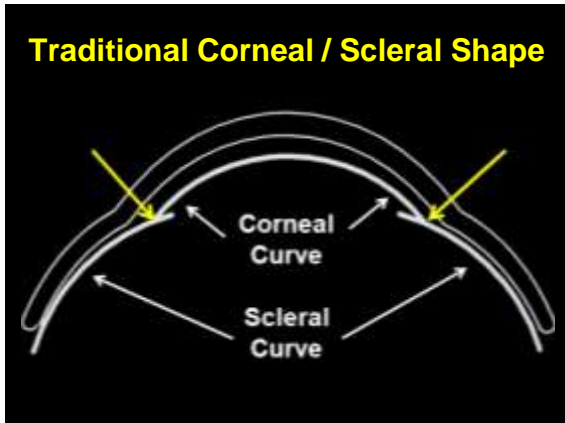
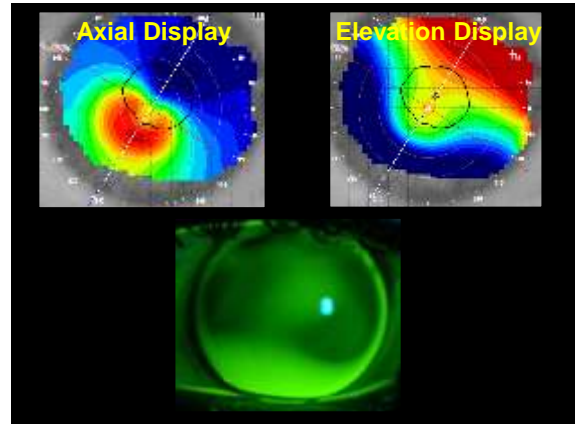
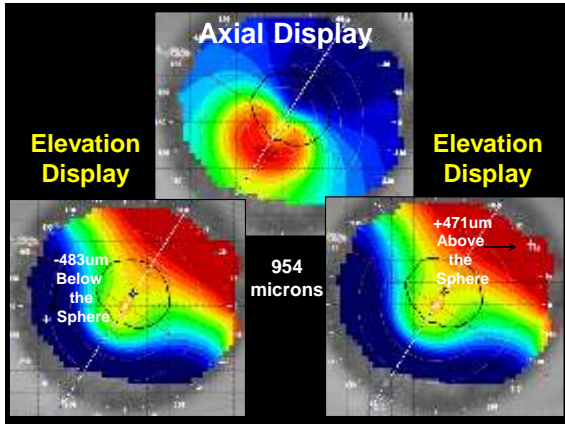


Pellucid Marginal Degeneration Clinical Findings

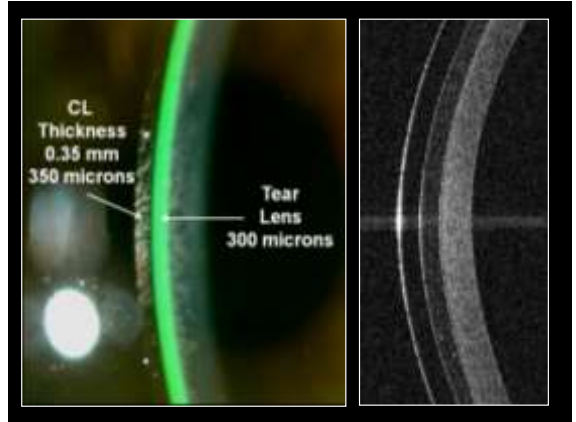
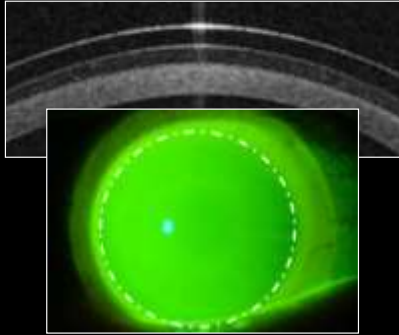
The area of thinning is concentric to the inferior limbus and separated by 1 mm of normal cornea



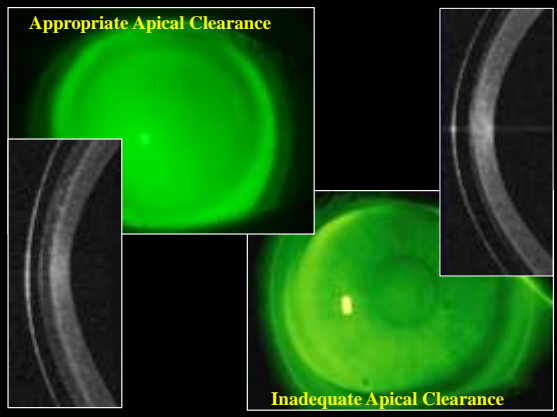




Central Clearance Zone
200 to 400 microns of Apical Clearance



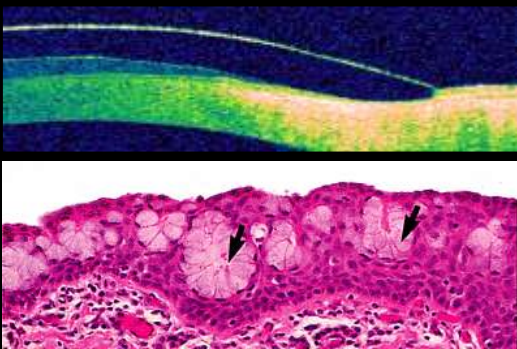
Appropriate Apical Clearance



Apical Clearance at Dispensing
250 microns

Apical Clearance Post 8 Hours
150 microns

Bulbar Conjunctiva Anatomy

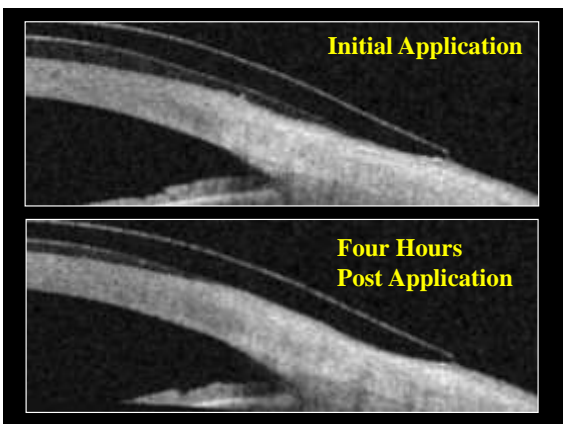
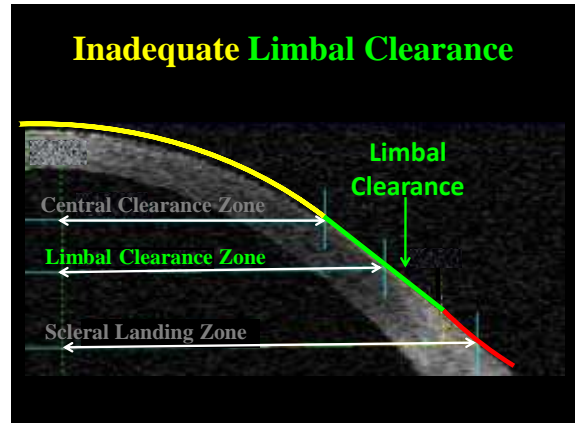
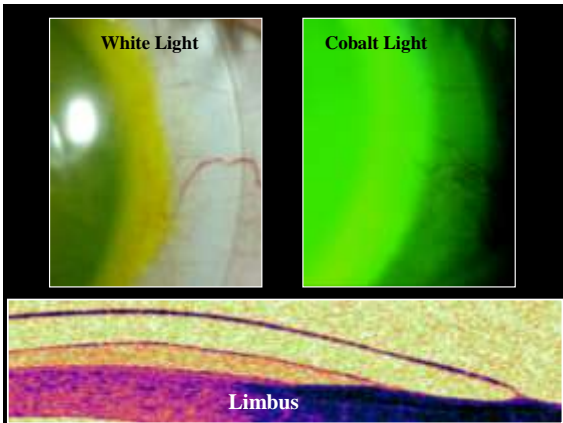
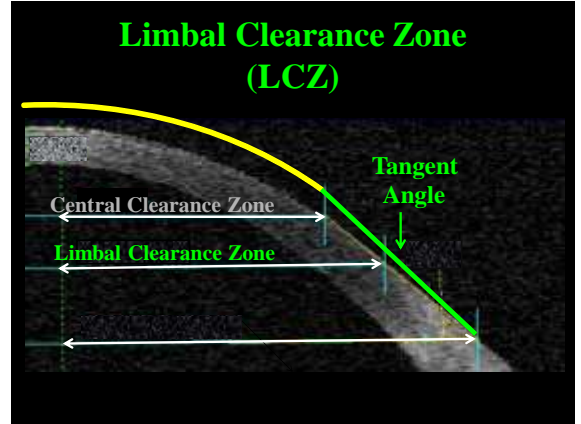
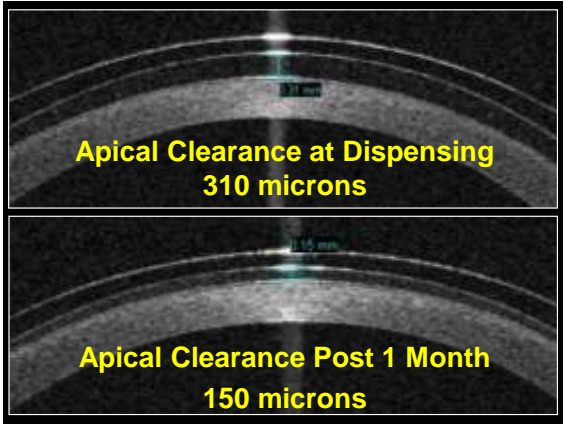


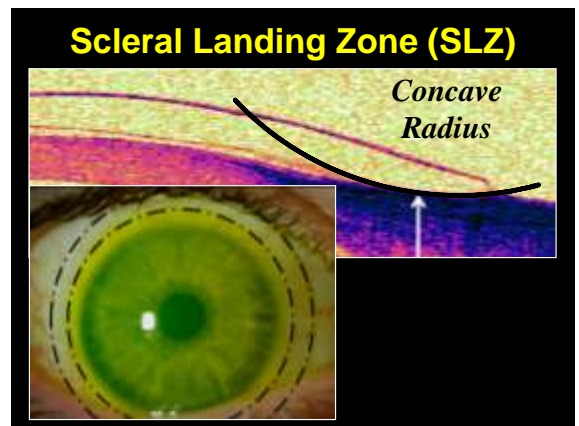
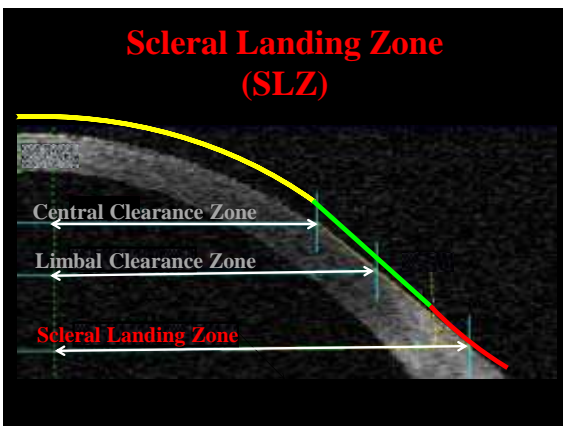
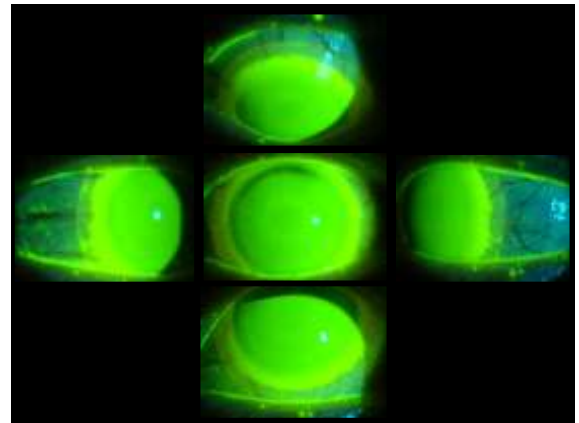
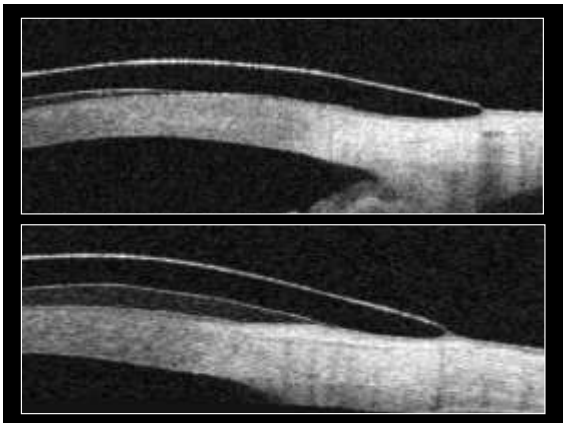
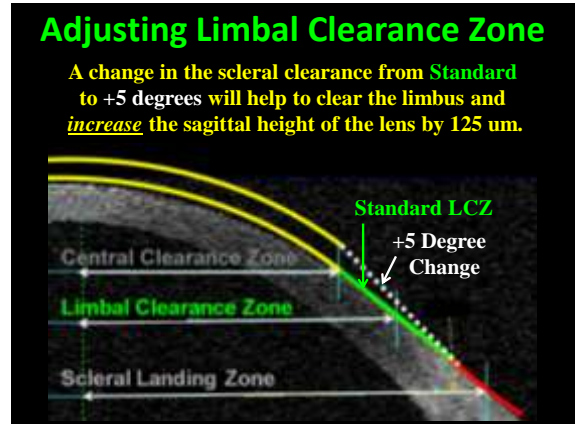
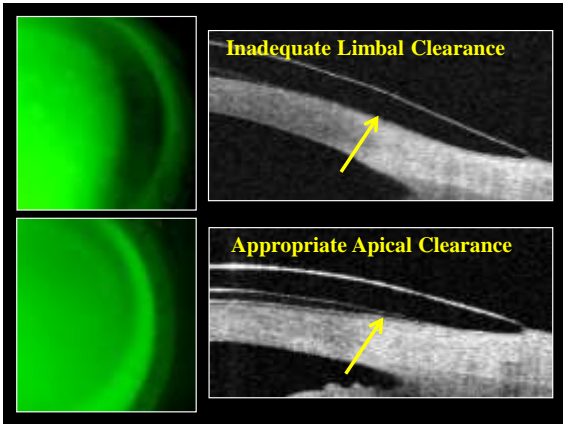
Lens Settling

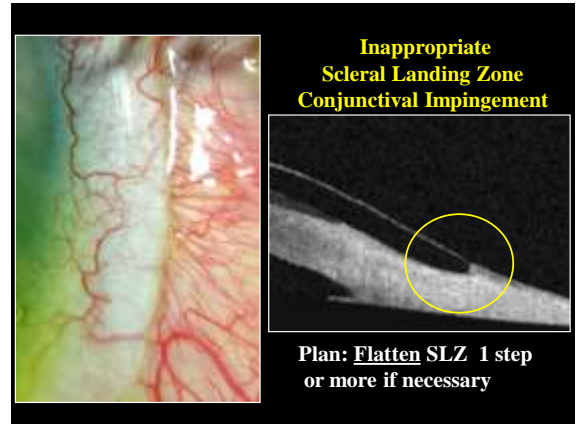
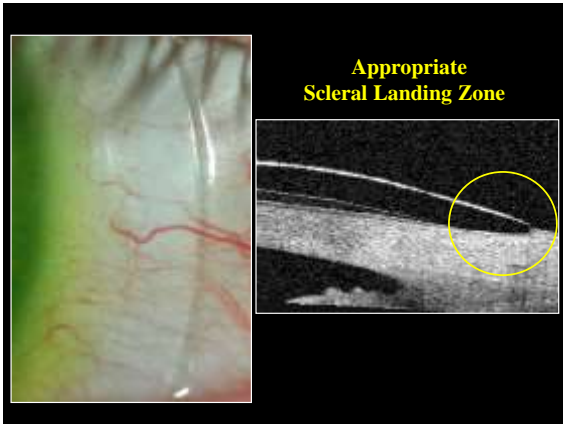
15 Normal Eye Subjects

- Following 8 hours of lens wear the scleral lenses "settled" on average **96 um**.
- The amount of "lens settling" varied with a range in sagittal depth loss from **70 to 180 um**.
- Following one month of scleral lens wear John Mountford found the average lens settling to be **146 microns with a range of 106 to 186 microns**.









Scleral Landing Zone / Edge Lift

Description	Sag Change at 15.0 mm	Edge Lift Change at 16.5 mm
Increase (Flatten) Edge Lift One Step	25um less sag	35um more EL

Standard Edge

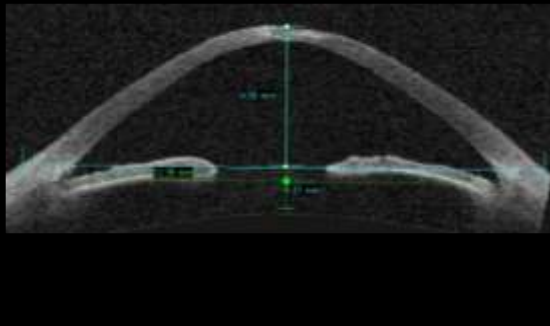
1 Step Flatter Edge Lift
35 microns additional lift

1. The lens should clear the entire cornea
2. The lens should clear the limbus (360 degrees or as much as possible)
3. The lens should "land" on the sclera (the full weight, pressure and bearing of the lens, should rest on the sclera).

Scleral Lens Fitting by Sagittal Height

"Landing Cord" 15.0mm

Sag at 15.0 mm Cord 4.00 mm



ICD-16.5 Diagnostic Lens Parameters



Identify the Corneal Condition	Based on the Corneal Location, Select the Initial ECP Sag Lens with this Sag	Initial Sag at 15mm	Preval	IC Sag	IC Diameter	
Maximal Depth Eyes - Normal Shapes - Median Flat Keratometry - Glaucoma Surgery Disease - Post Refractive Surgery	Start with the 4100µm Sag	4000	16.5	+1.00	8.03	38.00
		4000	16.5	0.00	8.04	42.00
		4000	16.5	-1.00	7.18	47.00
		4000	16.5	-2.00	6.00	48.00
Medium Depth Eyes - Microsurgical - Peripheral Marginal Degeneration - Corneal Transplants (low depth)	Start with the 4000µm Sag	4000	16.5	-0.00	8.13	38.00
		4000	16.5	-0.00	8.89	40.00
		4000	16.5	-0.00	8.03	36.00
		4000	16.5	-1.00	8.75	38.00
High Depth Eyes - Corneal Transplants (high depth)	Start with the 4000µm Sag	4000	16.5	-0.00	8.40	32.00
		4000	16.5	-0.00	8.67	33.00
Extreme Depth Eyes - Warring Corneal Transplants - Keratoconus	Select Only in Extreme Depth Cases	3000	16.5	-11.00	8.14	38.00
		3000	16.5	-13.00	8.11	38.00
		3000	16.5	-10.00	8.03	38.00

Lens Application



Preservative-free saline and sodium fluorescein

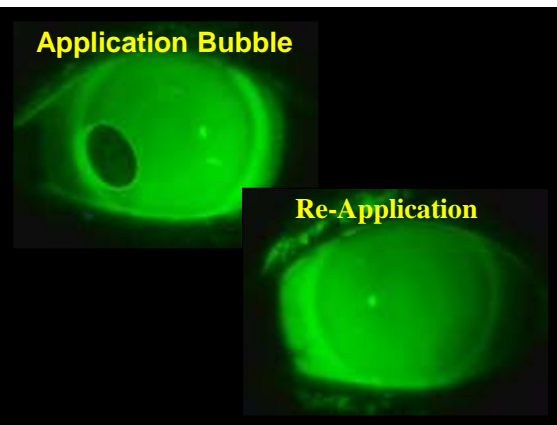


Lens Application

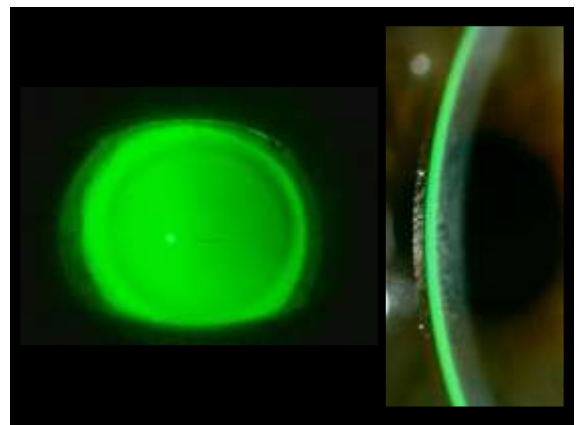
Have the patient look down....patient holds their upper and lower lids & the lens is applied

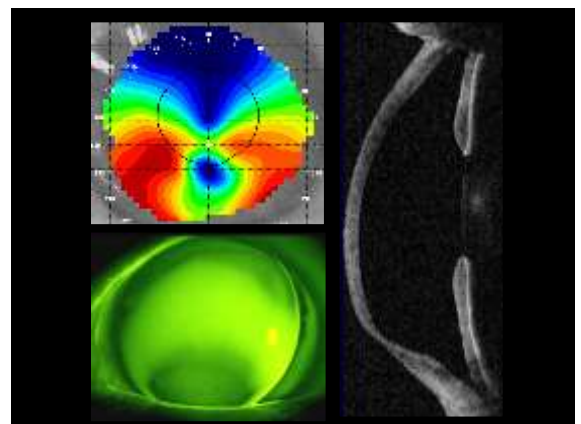
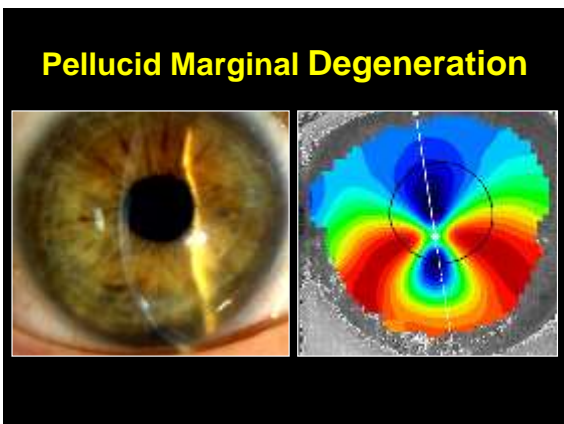
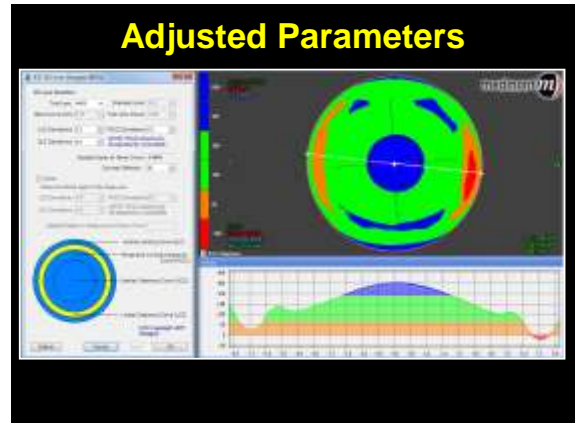
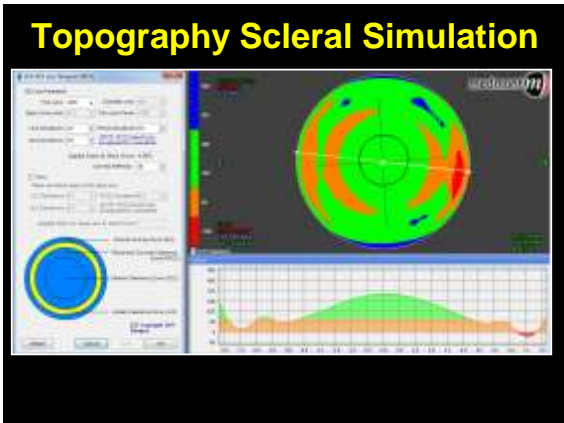
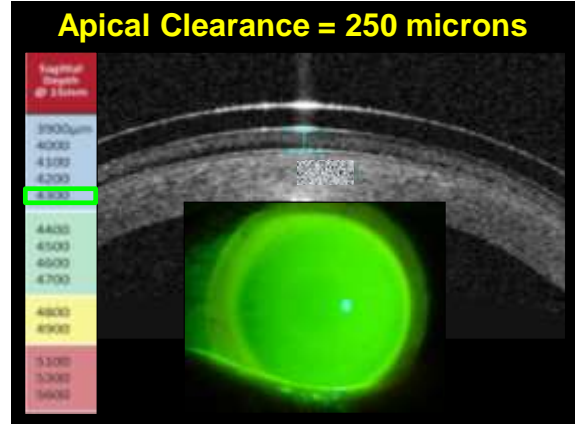
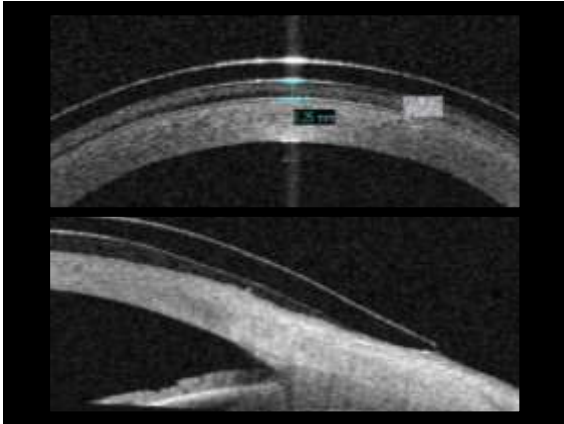


Application Bubble

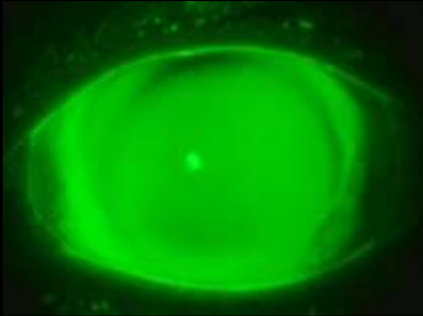


Re-application



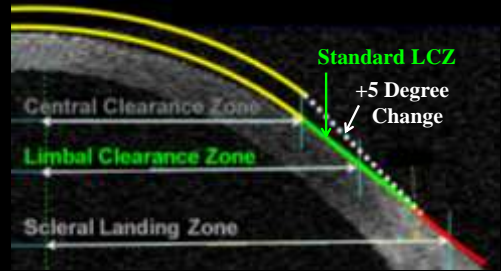


Right Eye PMD

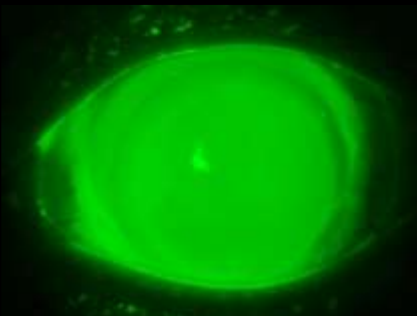


Adjusting Limbal Clearance Zone

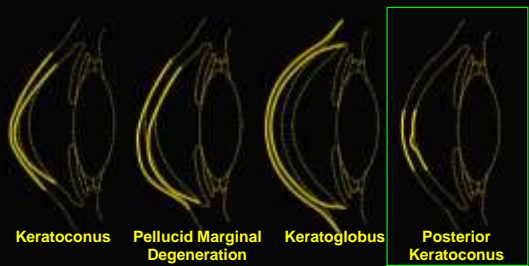
A change in the; scleral clearance from **Standard** to **+5 degrees**, will help to clear the limbus and **increases** the sagittal height of the lens by 125 um



Right Eye PMD



Ectatic Conditions

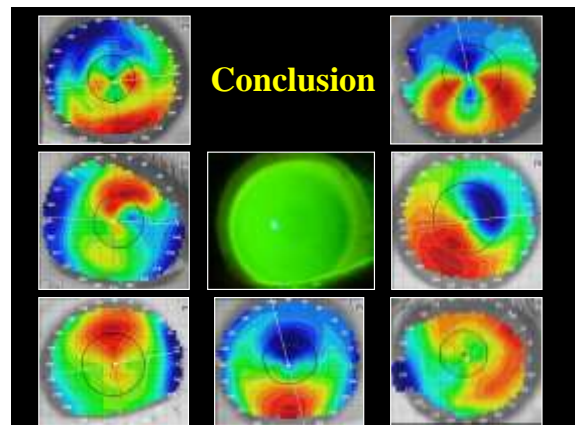
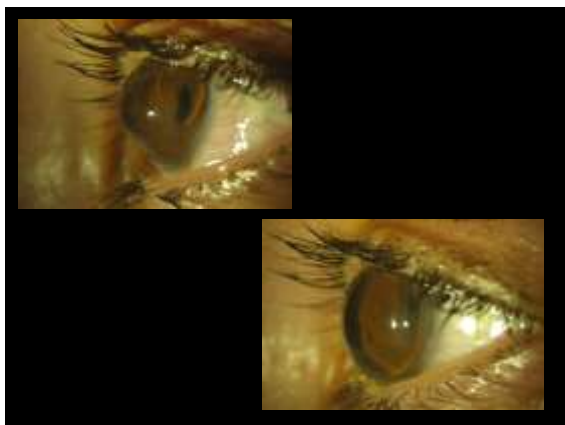
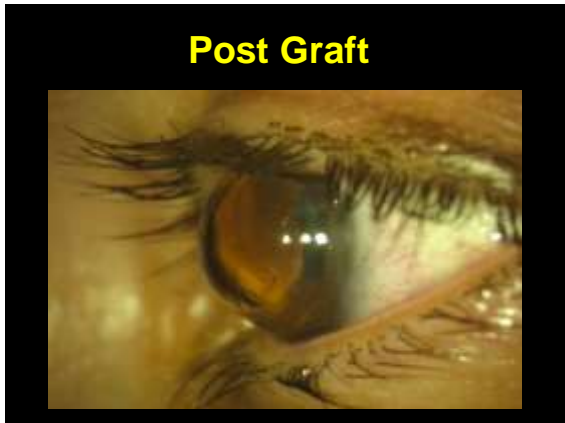
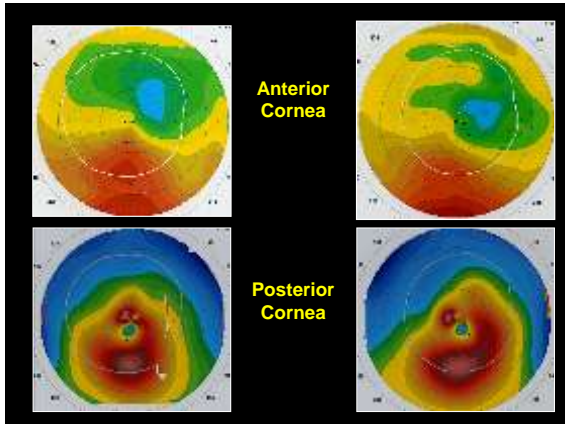


Posterior Keratoconus



Orbiscan





Ocular Manifestations of Obstructive Sleep Apnea

Dina Erickson, OD, FAAO

Outline:

Background:

Obstructive sleep apnea (OSA) occurs when the muscles in the back of the throat relax to a level where they obstruct normal breathing.

Definitions:

- Apnea
- Hypopnea:

Diagnosis:

- Polysomnography: aka sleep study

Risk Factors:

- Overweight:
- Large neck size
- Age:
- Narrow airway
- Family Hx
- Smoking
- Alcohol use
- Gender:
- Race:
- Systemic conditions:

OSA treatment:

- Lifestyle changes
- Position therapy
- Oral appliances
- Continuous positive airway pressure (CPAP)

Associates Systemic conditions:

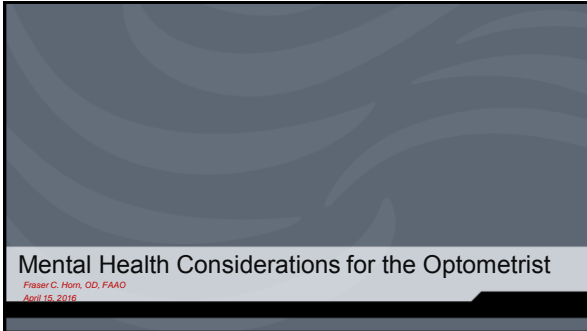
- OSA is considered a serious medical problem:
- Complications include:
 - Cardiovascular disease:
 - Coronary artery dz (CAD)
 - Heart attack
 - Hear failure
 - Stroke
 - Arrhythmias
 - Sudden death

- OSA patients tend to suffer from
 - Daytime drowsiness
 - Fatigue
 - Irritability
 - Poor concentration
 - Falling asleep during regular daily tasks
 - Complications with medications and surgery
 - Sleep-deprived partners
- Symptoms may also include:
 - Memory problems
 - Morning headaches
 - Mood swings
 - Depression
 - Frequent night urination

Ocular manifestations:

- **Floppy eyelid syndrome:**
 - The most common ocular disorder associated with OSA
 - Characterized by loose, easily everted upper eyelids. Floppy eyelid syndrome (FES) is often seen in overweight, middle-aged males
 - **Symptoms of FES:**
 - **Ocular signs:**
 - Conjunctivitis
 - Hyperemia
 - Lid ptosis
 - Odd “rubbery” consistency to the lids
 - Past Ocular Hx may include:
 - Keratoconus
 - Treatment of FES
- **Keratoconus (KC):**
 - Strong association between FES and KC
 - KC patients have a higher risk of developing OSA
 - Patients with higher risk of developing OSA have a more severe KC
 - Proposed mechanisms:
 - Genetic predisposition
- **Glaucoma:**
 - Increased incidence of POAG and NTG in OSA pts
 - Mechanism:
 - Systemic workup if continuous progression despite adequate or aggressive treatment of glaucoma
- **Papilledema:**
 - Association between papilledema and untreated OSA
 - Mechanism:

- Continuous positive airway pressure (CPAP) use in patient with papilledema
 - Has been shown to improve or resolve papilledema
- **Nonarteritic Anterior Ischemic Optic Neuropathy (NAION)**
 - Is a result of impaired perfusion to the optic nerve head, or optic disc.
 - Two types
 - Nonarteritic anterior ischemic optic neuropathy is associated with 2.5 times higher prevalence in OSA patients than in controls
 - Mechanism of action
- **Retinal Vein Occlusion**
 - One of the most common causes of blindness not associated with DM
 - Usually occurs at night
 - Patients tend to:
 - Be older
 - Have HTN, DM and atherosclerosis
- **Retinal Thickness**
 - An inverse relationship between OSA and RNFL thickness
 - Not all studies agree on this
 -
- **Retinal Sensitivity:**
 - Studies have shown that OSA patients have a diffuse decrease in retinal sensitivity
 - Pathogenesis is not clear
- **Central Serous Choroidopathy:**
- **Dry Eye and corneal abrasions**
 - Air leakage from the CPAP mask can lead to severe dry eyes
 - This in turn can lead to corneal abrasion and other corneal problems if left untreated or uncorrected.
- **Central Corneal Thickness:**
 - A recent study showed that CCT was significantly decreased in patients with OSA compared to the control group
 - Possible mechanism.
- **Diabetes and diabetic retinopathy:**
 - OSA alters glucose metabolism
 - An independent risk factor for the appearance and aggravation of diabetic retinopathy



Mental Health Considerations for the Optometrist

Fraser C. Horn, OD, FAAO
April 15, 2016

Disclosure(s)

I have consulted for Nike

I do not receive any direct or indirect benefits for this presentation

Goals for today

1. Differentiate between common mental health disorders
2. Identify common signs and symptoms of mental health conditions
3. Consider how to approach the topic of mental health and interprofessional collaborations

What is a Mental Illness?

- A mental illness is a condition that impacts a person's thinking, feeling or mood and may affect his or her ability to relate to others and function on a daily basis.
- Each person will have different experiences, even people with the same diagnosis.

<https://www.nami.org/Learn-More/Mental-Health-Conditions>

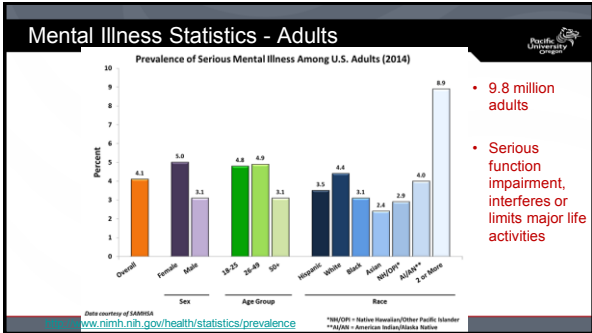
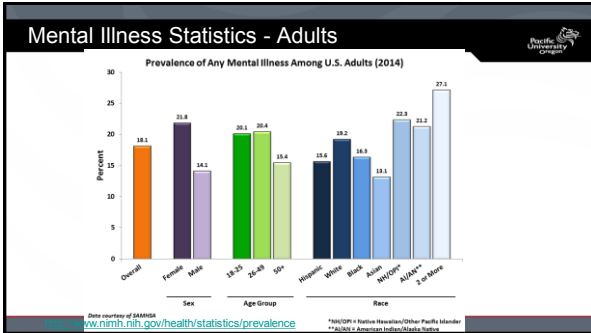
What Are The Issues

It is estimated that ~20% of medical patients suffer from significant psychiatric problems

At least half of which are unidentified by the physicians

What Are The Issues

It is estimated that patients with mental illness utilize twice as much non-psychiatric medical care as patients without mental illness



Mental Illness Statistics - Children

Any Disorder

Lifetime Prevalence of 13 to 18 year olds

- Lifetime Prevalence: 46.3% of 13 to 18 year olds
- Lifetime Prevalence of "Severe" Disorder: 21.4% of 13 to 18 year olds have a "severe" disorder

Demographics (for lifetime prevalence)

- Sex: Not statistically different
- Age: Statistically different

- Race: Statistically significant differences were found between non-Hispanic whites and other races

Just over 20% either currently, or at some point in their life will have a seriously debilitating mental disorder

Markkanen KJ, Van J, Burstein M, Swenson SA, Avenevoli S, Cal L, Bergt C, Georgakidis K, Swendsen J. Lifetime prevalence of mental disorders in U.S. adolescents: Results from the National Comorbidity Study-Adolescent Supplement (NCS-A). *J Am Acad Child Adolesc Psychiatry*. 2010 Oct;49(10):1202-10. <http://www.nimh.nih.gov>

Mental Illness Statistics - Children

12-month Prevalence for Children (8 to 15 years)

<http://www.nimh.nih.gov/health/statistics/prevalence> Date courtesy of CDC

Mental Illness Statistics

Prevalence

- 12-month Prevalence: 4.1% of U.S. adult population*
- Severe: 41.3% of these cases (e.g., 1.7% of U.S. adult population) are classified as "severe"

Demographics (for lifetime prevalence)*

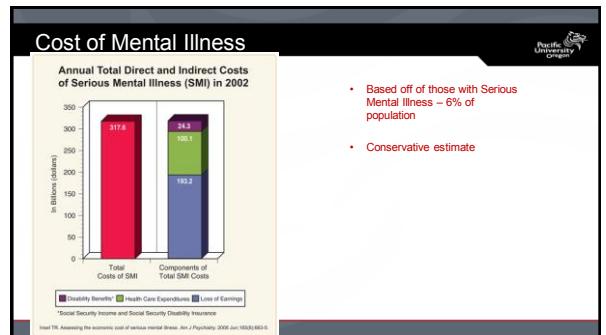
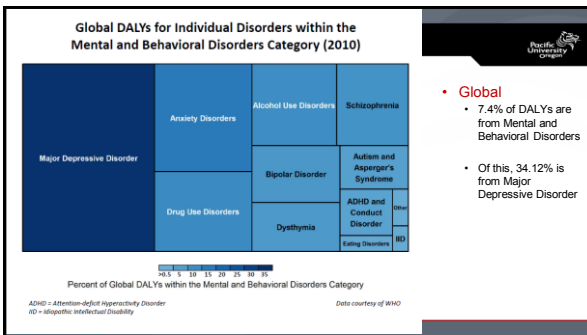
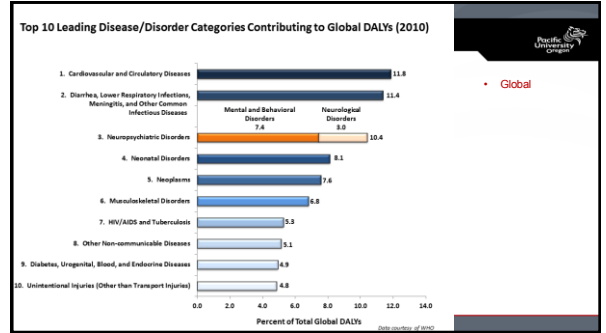
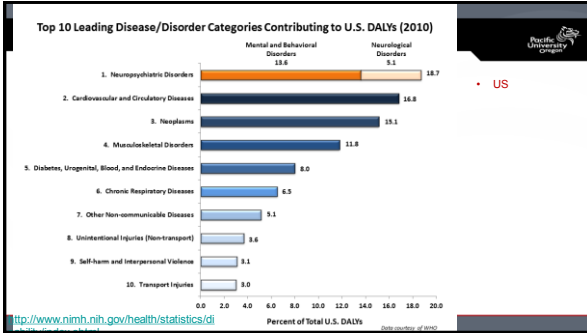
- Sex: Not Reported
- Race: Not Reported
- Age:
 - 18-29: 7.8%
 - 30-44: 8.3%
 - 45-59: Not Reported
 - 60+: Not Reported

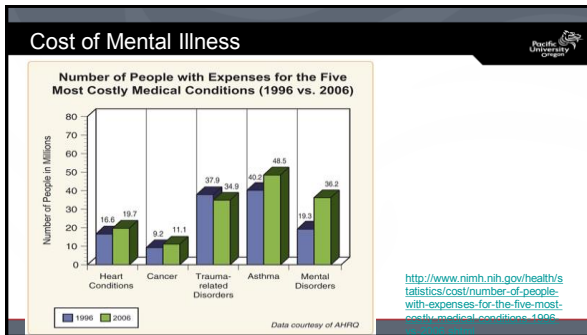
Average Age-of-Onset: 7 years old†

- ADHD

"Burden" of Mental Illness

- The burden of disability associated with a disease or disorder can be measured in units called disability-adjusted life years (DALYs).
- DALYs represent the total number of years lost to illness, disability, or premature death within a given population.
- DALYs are calculated by adding the number of years of life lost to the number of years lived with disability for a certain disease or disorder.





How are Mental Illnesses Diagnosed?

- **Psychiatrist vs. Psychologist**
 - Both treat mental illness through psychotherapy
- **Psychiatrists**
 - MD
 - Stronger sense of biology and neurochemistry
 - Can prescribe medications
- **Psychologists**
 - PhD, PsyD
 - look closely at behavior
 - Can prescribe in a few states limited number of meds

How are Mental Illnesses Diagnosed?

- **Counselor**
 - Provide psychotherapy
 - master's degree or higher in mental health counseling or marriage and family therapy.
 - Most states require professional counselors to be licensed if they work in certain settings, including private practice.

How are Mental Illnesses Diagnosed?

- **Diagnostic and Statistical Manual of Mental Disorders (5th ed)**
 - Standard classification of mental disorders used by mental health professionals in the United States
 - Contains a listing of diagnostic criteria for every psychiatric disorder recognized by the U.S. healthcare system.

How are Mental Illnesses Diagnosed?



- **Diagnostic and Statistical Manual of Mental Disorders (5th ed)**
- **Probable Alzheimer's disease** is diagnosed if either of the following is present; otherwise, **possible Alzheimer's disease** should be diagnosed.
- Evidence of a causative Alzheimer's disease genetic mutation from family history or genetic testing.
- **All three of the following are present:**
 - Clear evidence of decline in memory and learning and at least one other cognitive domain (based on detailed history or serial neuropsychological testing).
 - Steadily progressive, gradual decline in cognition, without extended plateaus.
 - No evidence of mixed etiology (i.e., absence of other neurodegenerative or cerebrovascular disease, or another neurological, mental, or systemic disease or condition likely contributing to cognitive decline).

Let's look at conditions you will see in your chair



- **Mood Disorders, specifically Depression**
- **Dementia & Alzheimers**
- **Anxiety Disorders**
- **Eating Disorders**
- **Schizophrenia**

Depressive Disorders

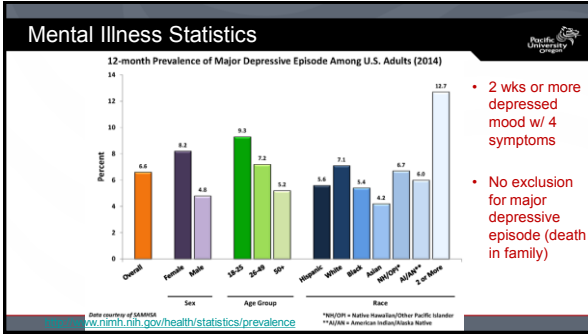


- **Persistent depressive disorder** (also called dysthymia) is a depressed mood that lasts for at least two years.
- **Perinatal depression** is much more serious than the "baby blues." Women with perinatal depression experience full-blown major depression during pregnancy or after delivery (postpartum depression).
- **Psychotic depression** occurs when a person has severe depression plus some form of psychosis, such as having disturbing false fixed beliefs (delusions) or hearing or seeing upsetting things that others cannot hear or see (hallucinations).

Depressive Disorders



- **Seasonal affective disorder** is characterized by the onset of depression during the winter months, when there is less natural sunlight. This depression generally lifts during spring and summer.
- **Bipolar disorder** is different from depression. Someone with bipolar disorder experiences episodes of extremely low moods that meet the criteria for major depression (called "bipolar depression"). But a person with bipolar disorder also experiences extreme high moods.



- 2 wks or more depressed mood w/ 4 symptoms
- No exclusion for major depressive episode (death in family)

Depressive Disorders

- **Signs and Symptoms**
 - Persistent sad, anxious, or "empty" mood
 - Feelings of hopelessness, or pessimism
 - Irritability
 - Feelings of guilt, worthlessness, or helplessness
 - Loss of interest or pleasure in hobbies and activities
 - Decreased energy or fatigue

Depressive Disorders

- **Signs and Symptoms (cont)**
 - Moving or talking more slowly
 - Feeling restless or having trouble sitting still
 - Difficulty concentrating, remembering, or making decisions
 - Difficulty sleeping, early-morning awakening, or oversleeping
 - Appetite and/or weight changes
 - Thoughts of death or suicide, or suicide attempts
 - Aches or pains, headaches, cramps, or digestive problems without a clear physical cause and/or that do not ease even with treatment

Signs and Symptoms of Depression

- "Classic" symptoms of depression are actually fairly uncommon (20% of pts), and include:
 - Exaggerated / prolonged sadness
 - Exaggerated / prolonged hopelessness
 - Loss of pleasure in usually-enjoyed activities

Signs and Symptoms of Depression



- **Most common presentation (80% of patients) is with somatic complaints, and these often precede "classic" symptoms by months or years**
 - These physical complaints can mimic other diseases, for example:
 - Chronic pain:
 - 1 = headache;
 - 2 = backache;
 - 3 = eye-centered pain/pressure
 - Gastrointestinal disturbances
 - Fatigue
 - Extensive history of (unexplained) medical illness

Signs and Symptoms of Depression



- **Somatization (conversion reaction) is more socially acceptable, more tangible, and has less stigma**
 - Recent studies have found that there are true neuro-chemically triggered sensations
 - Pain and depression share common biological pathways [serotonin (5-HT) elevations; norepinephrine elevations].

Signs and Symptoms of Depression



- **Factors putting patients at risk for depression:**
 - Genetics – over 2/3 have positive family history
 - Significant life stresses – in family, work/school, peer relationships
 - In a major change period of life – too predictable or unpredictable

Management Keys for O.D.'S



- The depression-to-physical-complaint connection should be stated clearly to the patient
- **Reassure the patient that YOU will work with them until their somatic complaints are resolved**
 - Tell them YOU will remain involved through a co-management approach to healthcare
 - Provide encouragement and face-saving ways for the patients to heal

Management Keys for O.D.'S



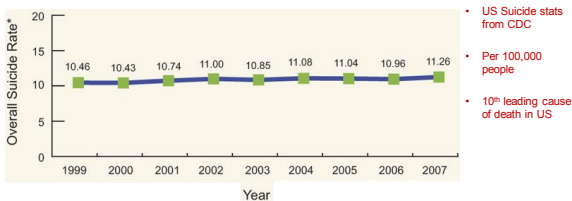
- When a referral is considered appropriate/indicated/necessary, the **hardest part** is:
 - How to suggest to the patient that significant emotional-based problems appear to exist, and may be the source of their physical complaints

Management Keys for O.D.'S



- **Strategies to improve interaction:**
 - Respond to signs for help by making sure they have referrals to mental health care professionals
 - Give these pts adequate time to express their concerns
 - Do not ignore their messages – respond to their communications along the affective (emotional) dimension
 - Demonstrate good listening skills and empathetic responding
- **BEWARE: ANY suspicion of suicidal tendencies require immediate action**

Suicide Statistics



<http://www.nimh.nih.gov/health/statistics/suicide/index.shtml>

Suicide



- **Who is at risk?**
 - People of all genders, ages, ethnicities
- **Main risk factors:**
 - Depression, other mental disorders, or substance abuse disorder
 - A prior suicide attempt
 - Family history of a mental disorder or substance abuse
 - Family history of suicide
 - Family violence, including physical or sexual abuse
 - Having guns or other firearms in the home
 - Incarceration, being in prison or jail
 - Being exposed to others' suicidal behavior, such as that of family members, peers, or media figures.

Suicide



• How to prevent?

- Treat underlying disorder
- Psychotherapy
 - Cognitive Behavioral Therapy (CBT)
 - Dialectical Behavior Therapy (DBT) – for borderline personality disorder
- Medications
- Training doctors to recognize signs

Suicide



• National Suicide Prevention Lifeline

- 1-800 – 273 – TALK (8255)

Dementia



- **Dementia is not a specific disease.**
- It's an overall term that describes a wide range of symptoms associated with a decline in memory or other thinking skills severe enough to reduce a person's ability to perform everyday activities.

Dementia



- **Alzheimer's Disease**
 - 60-80 percent of cases of Dementia
 - Progressive brain disorder that damages and eventually destroys brain cells, leading to memory loss and changes in thinking and other brain functions.
 - Usually develops slowly and gradually gets worse as brain function declines and brain cells eventually wither and die.
 - Ultimately, Alzheimer's is fatal, and currently, there is no cure.

<http://www.alz.org/what-is-dementia.asp>

Dementia



- **Vascular Dementia**
 - 2nd most common dementia type
 - Occurs after a stroke

<http://www.alz.org/what-is-dementia.asp>

Alzheimer's



- **Symptoms**
 - Most common early sign...
 - Difficulty remembering newly learned information because Alzheimer's changes typically begin in the part of the brain that affects learning.

Alzheimer's

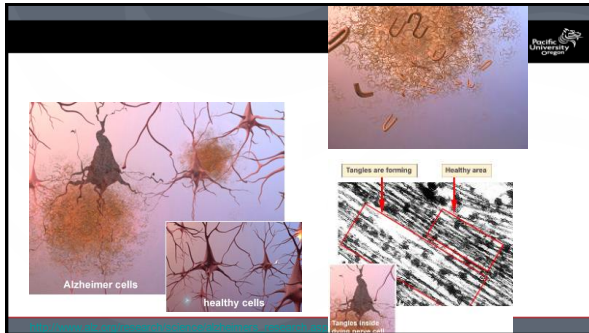


- **Symptoms**
 - As Alzheimer's advances through the brain it leads to increasingly severe symptoms, including:
 - disorientation;
 - mood and behavior changes;
 - deepening confusion about events, time and place;
 - unfounded suspicions about family, friends and professional caregivers;
 - serious memory loss and behavior changes; and
 - difficulty speaking, swallowing and walking.

Alzheimer's



- **Hallmark Changes of Alzheimer's**
 - **Plaques**, microscopic clumps of a protein fragment called beta-amyloid
 - **Tangles**, twisted microscopic strands of the protein tau (rhymes with "wow")
 - **Loss of connections among brain cells** responsible for memory, learning and communication. These connections, or synapses, transmit information from cell to cell.
 - **Inflammation**, triggered by the body's immune system
 - **Eventual death of brain cells** and severe tissue shrinkage



Alzheimer's

- **The eyes**
 - Beta-amyloid may also build up in retina
 - Two tests to identify beta-amyloid in retina
 - One uses cucurmin that attached to beta-amyloid in the retina and then fluoresces with an imaging system from NeuroVision
 - Another study uses a laser-scanner to detect beta-amyloid in the lens

<http://www.nbcnews.com/health/aging/worried-you-may-be-developing-alzheimers-check-your-eyes-n153226>

Alzheimer's

- **The eyes**
 - Study may have shown that retinal vessels are smaller than "normal" individuals

<http://www.webmd.com/alzheimers/news/20110718/eye-test-spots-alzheimers-before-symptoms?page=2>

Alzheimer's

- **Diagnostic tests**
 - Working on all sorts of tests (blood, smell, eye, and more)
 - Currently through a psychological eval and imaging

Alzheimer's



- **Stages – Mild**
 - May function independently.
 - May feel as if he or she is having memory lapses, such as forgetting familiar words or the location of everyday objects.
 - Friends, family or neighbors begin to notice difficulties.

Alzheimer's



- **Stages – Mild**
 - Common difficulties include:
 - Problems coming up with the right word or name
 - Trouble remembering names when introduced to new people
 - Having greater difficulty performing tasks in social or work settings
 - Forgetting material that one has just read
 - Losing or misplacing a valuable object
 - Increasing trouble with planning or organizing

Alzheimer's



- **Stages – Moderate**
- **Longest stage and can last for many years.**
- **You may notice...**
 - Confusing words,
 - Getting frustrated or angry, or acting in unexpected ways, such as refusing to bathe.
 - Damage to nerve cells in the brain can make it difficult to express thoughts and perform routine tasks.

Alzheimer's



- **Stages – Moderate**
- **Notice...**
 - Forgetfulness of events or about one's own personal history
 - Feeling moody or withdrawn, especially in socially or mentally challenging situations
 - Being unable to recall their own address or telephone number or the high school or college from which they graduated
 - Confusion about where they are or what day it is
 - The need for help choosing proper clothing for the season or the occasion
 - Trouble controlling bladder and bowels in some individuals
 - Changes in sleep patterns, such as sleeping during the day and becoming restless at night
 - An increased risk of wandering and becoming lost
 - Personality and behavioral changes, including suspiciousness and delusions or compulsive, repetitive behavior like hand-wringing or tissue shredding

Alzheimer's

- **Stages – Severe**
 - Individuals lose the ability to respond to their environment, to carry on a conversation and, eventually, to control movement.
 - They may still say words or phrases, but communicating pain becomes difficult.
 - As memory and cognitive skills continue to worsen, personality changes may take place and individuals need extensive help with daily activities.

Alzheimer's

- **Stages – Severe**
- **At this stage, individuals may:**
 - Require full-time, around-the-clock assistance with daily personal care
 - Lose awareness of recent experiences as well as of their surroundings
 - Require high levels of assistance with daily activities and personal care
 - Experience changes in physical abilities, including the ability to walk, sit and, eventually, swallow
 - Have increasing difficulty communicating
 - Become vulnerable to infections, especially pneumonia

Alzheimer's

- **Treatments**
 - Medications for memory loss
 - Focus on behavioral issues
 - Sleep changes
 - Neutraceuticals

http://www.alz.org/alzheimers_disease_treatments.asp

Alzheimer's

Treatments-at-a-glance

Generic	Brand	Approved For	Side Effects
donepezil	Aricept	All stages	Nausea, vomiting, loss of appetite and increased frequency of bowel movements.
galantamine	Razadyne	Mild to moderate	Nausea, vomiting, loss of appetite and increased frequency of bowel movements.
memantine	Namenda	Moderate to severe	Headache, constipation, confusion and dizziness.
rivastigmine	Exelon	Mild to moderate	Nausea, vomiting, loss of appetite and increased frequency of bowel movements.
memantine + donepezil	Namzaric	Moderate to severe	Headache, diarrhea, dizziness, loss of appetite, vomiting, nausea, and bruising.

- **Treatments for Memory Loss**

http://www.alz.org/alzheimers_disease_standard_prescription

Anxiety Disorders

- Anxiety disorders include disorders that share features of excessive fear and anxiety and related behavioral disturbances.
 - Fear is the emotional response to real or perceived imminent threat, whereas anxiety is anticipation of future threat.
- Anxiety disorders differ from one another in the types of objects or situations that induce fear, anxiety, or avoidance behavior, and the associated cognitive ideation.
- Anxiety disorders tend to be highly comorbid with each other

Anxiety Disorders

- Individuals with anxiety disorders typically overestimate the danger in situations they fear or avoid, the primary determination of whether the fear or anxiety is excessive or out of proportion is made by the clinician, taking cultural contextual factors into account.
 - Many develop in childhood and tend to persist if not treated.
 - More frequently in females than in males (approximately 2:1 ratio).

Mental Illness Statistics

Prevalence

- 12-month Prevalence: 18.1% of U.S. adult population*
- Severe: 22.8% of these cases (e.g., 4.1% of U.S. adult population) are classified as "severe"†

Category	Prevalence (%)
Lifetime Prevalence	38.8
12-month Prevalence	18.1
12-month Prevalence Classified as Severe	4.1

Demographics (for lifetime prevalence)†

- Sex: Women are 60% more likely than men to experience an anxiety disorder over their lifetime.
- Race: Non-Hispanic blacks are 20% less likely, and Hispanics are 30% less likely, than non-Hispanic whites to experience an anxiety disorder during their lifetime.

Age:

Age Group	Prevalence (%)
18-29	28.3
30-44	36.1
45-59	28.8
60+	13.1

- Any Anxiety Disorder
 - includes:...
 - PTSD
 - Obsessive-Compulsive
 - Specific phobias

Mental Illness Statistics

Prevalence

- 12-month Prevalence: 3.5% of U.S. adult population*
- Severe: 36.6% of these cases (e.g., 1.3% of U.S. adult population) are classified as "severe"†

Category	Prevalence (%)
Lifetime Prevalence	8.8
12-month Prevalence	3.5
12-month Prevalence Classified as Severe	1.3

Demographics (for lifetime prevalence)†

- Sex: Not Reported
- Race: Not Reported

Age:

Age Group	Prevalence (%)
18-29	6.5
30-44	8.2
45-59	9.9
60+	3.5

- PTSD
 - Develops after exposure to a terrifying event or ordeal in which there was the potential for or actual occurrence of grave physical harm.

Average Age-of-Onset: 23 years old*

Generalized Anxiety Disorder



- **Diagnostic Criteria**
 - Excessive anxiety and worry (apprehensive expectation)
 - The individual finds it difficult to control the worry.
 - The anxiety and worry are associated with three (or more) of the following six symptoms:
 - Restlessness or feeling keyed up or on edge.
 - Being easily fatigued.
 - Difficulty concentrating or mind going blank.
 - Irritability.
 - Muscle tension.
 - Sleep disturbance (difficulty falling or staying asleep, or restless, unsatisfying sleep).

Generalized Anxiety Disorder



- **Diagnostic Criteria**
 - The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
 - The disturbance is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition (e.g., hyperthyroidism).
 - The disturbance is not better explained by another mental disorder

Generalized Anxiety Disorder



- **Treatment Tips...**
 - Look at worries a new way
 - Learn calming / relaxation techniques
 - Exercise
 - Better diet
 - Sleep

Generalized Anxiety Disorder



- **Treatment Options**
 - Psychotherapy
 - Medications

Anxiety Disorders and Phobic Neuroses



- **Strategies to improve interaction:**
 - safe environment in the office
 - Give the patient adequate time to adapt to the environment and acclimate to testing situations
 - Detailed explanations of your tests before you perform them will help create a safe environment for the patient
 - Validate their importance to you by asking the patient for any questions; reassuring and addressing all of their inquiries

Schizophrenia



- Schizophrenia is a chronic and severe mental disorder that affects how a person thinks, feels, and behaves.
- People with schizophrenia may seem like they have lost touch with reality.
- Although schizophrenia is not as common as other mental disorders, the symptoms can be very disabling.

Schizophrenia



- **Signs and Symptoms**
 - Usually start between ages 16 and 30.
 - The symptoms of schizophrenia fall into three categories: positive, negative, and cognitive.
 - **Positive symptoms:** "Positive" symptoms are psychotic behaviors not generally seen in healthy people. People with positive symptoms may "lose touch" with some aspects of reality. Symptoms include:
 - Hallucinations
 - Delusions
 - Thought disorders (unusual or dysfunctional ways of thinking)
 - Movement disorders (agitated body movements)

Schizophrenia



- **Signs and Symptoms**
 - **Negative symptoms:** "Negative" symptoms are associated with disruptions to normal emotions and behaviors. Symptoms include:
 - "Flat affect" (reduced expression of emotions via facial expression or voice tone)
 - Reduced feelings of pleasure in everyday life
 - Difficulty beginning and sustaining activities
 - Reduced speaking

Schizophrenia



• Signs and Symptoms

- **Cognitive symptoms:** For some patients, the cognitive symptoms of schizophrenia are subtle, but for others, they are more severe and patients may notice changes in their memory or other aspects of thinking. Symptoms include:
 - Poor "executive functioning" (the ability to understand information and use it to make decisions)
 - Trouble focusing or paying attention
 - Problems with "working memory" (the ability to use information immediately after learning it)

Psychosis and Schizophrenia



• Strategies to improve interaction:

- Provide structure, reassurance, and be supportive and calm
 - Avoid sudden changes, and provide explanations when changes are necessary
- New procedures and strange equipment can evoke apprehension
- Minimize physical contact – many of these pts do not like to be touched

Case Examples



- Case 1 – Are you safe?
- Case 2 – The case of the feathers coming out of his eyes
- Case 3 – You are not a spy are you?

Thank you



Role of nutrition in the primary care practice

Dina Erickson, OD, FAAO

Course Description:

There is increasing evidence that nutrition can play an important role in ocular health. This lecture will aim to discuss the role of nutrition in some common ocular entities and highlighting how primary care optometrist can counsel their patients on nutrition.

Course Objectives:

1. Highlight the role of nutrition in diabetic eye disease
2. Highlight the role of nutrition in age relate macular degeneration
3. Highlight the role of nutrition in glaucoma
4. Review recent literature supporting the use of nutrition in eye disease
5. Provide an overview of how the primary care optometrist can provide nutrition guidance to their patients with the above eye conditions

Outline:

Background:

Research suggests that antioxidants and certain nutrients may reduce the risk of development and progression of certain eye conditions that may cause blindness. As primary eye care providers, optometrist are in the perfect position to provide nutrition education and lifestyle counseling for their patients who are at risk for such eye disease.

General discussion

- General basic principles for nutrition education
 - History of nutrition and nutrition counseling
 - Ask if they have ever had nutrition counseling
- General profile of the avg American patient
 - Some information is better than no information
 - If you can help them improve in one area you can make a difference.
 - The Standard American Diet
 - The best nutrition source is through healthy diet
 - Lifestyle factors
 - Diet
 - Exercise
 - Macular Pigment Optical Density (MPOD)
 - Location and importance
 - Low MPOD risks
 - Supplement intake

- Smoking
 - Genetics
- Most common diseases that can cause blindness and may benefit from nutrition counseling:
- PCPs don't have the time to discuss nutrition

Diabetes and diabetic retinopathy

Background:

- General facts about DM
 - Diagnosed and undiagnosed DM in in all ages the US in 2012 according to the CDC
 - **Total:** 29.1 million people or 9.3% of the population have diabetes.
 - **Diagnosed:** 21.0 million people.
 - **Undiagnosed:** 8.1 million people (27.8% of people with diabetes are undiagnosed)
 - The cost of DM in the US
 - Obesity and childhood obesity in the US
 - Blindness in the US from DM
 - In 2005–2008, of adults with diabetes aged 40 years or older, 4.2 million (28.5%) people had diabetic retinopathy
 - A recent study, conducted at CDC, found that the prevalence of diabetic retinopathy was high, affecting almost
 - 1/3 of adults over age 40 years with diabetes, and
 - More than 1/3 of African-Americans and Mexican-American
 - Diabetes-related blindness costs the US about \$ 500 million/yr
- DM prevention:
 - Better diet
 - Daily exercise
 - Better BG control
 - HTN control
 - C-Reactive Protein (CRP) and DME
- Risk factors for DR:
 - Obesity: adult and childhood obesity
 - Duration of DM
 - Glycemic control:
 - HTN
 - Serum lipid levels
 - Anemia
- Nutrition and DR

- Carotenoids
- Vitamin D3
- Vitamin B12
- Magnesium
- Coffee
- Green tea
- Turmeric/curcumin
- Cinnamon
- Goji berries
- Vinegar

Diabetes Visual Function Supplement Study: (DiVFuss)

- RCCT of adults with type 1 or type 2 DM
 - Daily use of nutritional supplement
 - Summary of findings

Other factors with DM:

- DM patients are 2X more likely to get dry eyes
- AMD accelerated by DM
- Type 2 DM patients have non-alcoholic liver dz.
 - Nutritionally modulated disorder that connects to DM
- WHO sugar consumption recommendation
- Goal Setting for and with your patients

AMD

General facts about AMD:

- Oxidative stress and AMD

Prevention of AMD

- AMD risk calculator
- AMD genetic testing

General patient profile

Environmental Risk factors:

- Smoking
- Nutrition!!
- Inflammation
- UV exposure
- Body Mass Index BMI
- CVD/HTN
- Lifestyle
- Other factors

Nutritional Risk factors:

- Dietary Intake
- Supplement use

- Dietary glycemic index
- Macular Pigment Optical Density (MPOD)
- Obesity

AREDS I & AREDS II

- Outcomes and controversies
- Available supplements

Nutrition and AMD:

- MPOD measurements
 - Not just in AMD
- Carotenoids
- Vitamin D
- Vitamin C
- Vitamin A
- Vitamin E
- Zinc
- Omega 3

Other factors to discuss with patients

- Dietary glycemic index
- Exercise
- Obesity
- Red wine
- Smoking
- Genetics and supplements

Summary of nutrition counseling for AMD patients

Glaucoma:

Background:

Nutrition:

- Flavonoids
- Antioxidants
- Omega 3 fatty acids
- Vitamin D
- Ginko Biloba

Lifestyle:

- Exercise
- Sleeping position

- Acupuncture
- Obesity
- Smoking status

Other:

- Marijuana

General nutrition guidelines:

Advanced Glycation End products (AGEs) in diet:

- General information
- Strongly implicated in DM, DR, AMD, Glaucoma, cataract, atherosclerosis, kidney/lung disease, nuero-degeneration, cancer metastasis
- AGEs in common foods
- How to limit AGE intake

Goal Setting for and with your patients:

- Type of diet
- Drink types
- Portion size
- Meal frequency
- Sleep duration
- Supplements
- BMI goals
- Criticize behavior not the patient

Posterior Segment Grand Rounds

Dina Erickson, OD, FAAO

Course Description:

This presentation will be an interactive presentation of common, unique and interesting cases managed by the presenter. Cases will include interpretation of various ocular imaging including fundus images, visual fields, and OCT. It will also include how evidence based literature has changed some of the ways we treat some eye conditions.

Course Objectives:

1. Use case based, interactive approach to treating some posterior segment common eye conditions
2. Provide a working understanding of how to interpret ocular imaging and use it to guide the course of patient management.
3. Discuss the most recent literature and how it guides us to new treatment options for certain conditions
4. Be familiar with the treatment and management of Central Retinal Vein Occlusion, Age Related Macular Degeneration and Central Retinal Artery Occlusion

Central Retinal Vein Occlusion:

Case #1:

- 59 year old Caucasian male presented to the office with visual disturbances after a car accident March 2014
 - Post concussion
- Findings
- Scheduled for a F/U in 1 month for glaucoma F/U & DFE
 - Fundus findings.
- What is your ddx?
- Sent to PCP to for blood work up
 - Blood work up results
- Returned for a F/U in 1 month.
 - Fundus findings
 - What is your Dx?
- What does the OCT show
- What would you do next?

CRVO Review:

- Risk Factors
 - Age
 - Systemic
 - The metabolic syndrome
 - HTN

- DM
- Hyperlipidemia HLD
- Atherosclerosis associated Dz
- Others
- Drug Therapy
- Severity of systemic Dz:
- Socioeconomic factors
 - AA 58% increased risk of CRVO compared to non-Hispanic whites.
- Smoking
- Ocular Risk factors:
 - Glaucoma

Drug treatments for CME secondary to CRVO:

- What are the treatment options?
- Anti VEGF therapy
- Studies to support the above:
 - COPERNICUS 2012
 - Aflibercept
 - GALILEO 2012
 - Aflibercept
 - Cruise 2010
 - Ranibizumab
 - EPSTEIN 2012
 - Bevacizumab
- Steroid therapy:
- Studies to support the above:
 - GENEVA 2010
 - Dexamethasone
 - SCORE 2009
 - Triamcinolone
- How do the above two therapy options compare?
- Weaknesses of the studies
- What are retina specialists doing?
- What may work best for the patient
- Further research.

Case #2:

Age Related Macular Degeneration:

- A 77 year old Caucasian male presented with the chief complaint of “white lines in middle of road appear as “sheep jumping”.
- Case history:
- Entering VAs

- Funuds exam
- TD OCT
- DDx
- Referral
- FA & PHP
- Treatment
- Progression and follow ups over the past few years

Current AMD Treatment:

- Avastin
- Lucentis
 - Long term potential side effects
- Eyelea
 - FDA approval vs clinical experience

Case #3:

Central Retinal Artery Occlusion

History:

82 year old Caucasian female complaining of “no vision” in the right eye since Nov and wants to know if there is anything we can do for her. She was seen by the local ophthalmologist and now wants a second opinion. Doesn’t want to tell us what he found so we can come up with our own diagnosis.

Review of systems is positive for:

- Carotid artery blockage with repair 2 years prior
- Type 2 DM
- HTN
- Ovarian cancer stage 1
- Seasonal allergies
- GI issues

Meds:

- Lisinopril
- Metformin
- Simvastatin
- Gabapentin
- Tricor
- Lasix

Objective findings:

VAs:

- OD: HM, OS 20/25

Pupils:

- Positive APD OD

Ant Seg

- Unremarkable

IOP:

- GAT: 9 mmHg OD & OS

Post Seg:

- Mid peripheral hemes OD
- Hollenhorst plaque superior temporal to disc.
- OCT and fundus photos taken. See slides

Central Retinal Artery Occlusion

Overview:

- Sudden, painless and severe loss of vision
- Vision loss occurs due to loss of blood supply to the inner layer of the retina.
- Acutely, obstruction of the central retinal artery results in inner layer edema and pyknosis of the ganglion cell nuclei.
- The retina becomes opacified and yellow-white in appearance due to the ischemic necrosis
- A cherry red spot is seen in the fovea due to:
 - Intact RPE and choroid underlying the fovea
 - The fovea is nourished by the choriocapillaris

Mortality:

- Life expectancy of patients with CRAO is 5.5 years compared to 15.4 years for an age-matched population without CRAO

Causes:

- Can vary depending on the patients' age and comorbid diseases present.
- Atherosclerotic changes:
 - The LEADING cause of CRAO in pts 40-60 years of age
 - Seen in 45% of cases
 - 20% of cases have 60% or greater stenosis

HTN tends to be present in 2/3 of pts

- DM
- Cardiac abnormalities
- Embolism:
 - Can be cholesterol, calcific or talc
 - Heart emboli are the most common cause in patients younger than 40
 - Associated with worse VAs.
 - Associated with higher morbidity and mortality rates

Work up:

- CBC
- ESR
- Fasting BG

- Blood cultures to evaluate for bacterial endocarditis and septic emboli
- Imaging:
 - Carotid ultrasound
 - FA
- OCT findings:

Treatment:

- Ocular massage
- Lower IOP
- Anterior chamber paracentesis
- Hyperbaric oxygen

Tips to Maximize Your Multifocal Soft Lens Fitting Success

Mark Andre, FAAO
Associate Professor of Optometry
Pacific University College of Optometry
Forest Grove, Oregon

Consultant to CooperVision, Inc.

Issues Surrounding Multifocals

- Success rates (past history)
- Chair time
- Diminished visual acuities
- Dryness
- Lens cost
- Practitioner's confidence

Clinical Pearls for Fitting Multifocal SCL

#1 Do not confuse equilibration, with adaptation.

• Equilibration takes minutes, while adaptation sometimes requires hours, or even days.

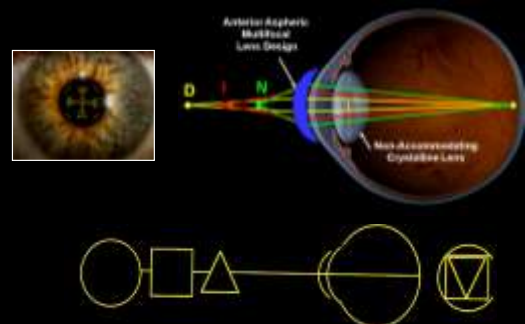
Adaptation to Multifocal Optics

- Sheedy et al, *Optom Vis Sci*, June 1993
 - Noted significant improvement in complex task performance with concentric bifocal lenses
 - No improvement with monovision
- Pappas et al, *Eye Contact Lens*, May 2009
 - Assess performance of 88 subjects at dispensing and after 4 days of wear
 - “Early assessment is relatively unrepresentative of performance later on during multifocal contact lens wear.”
- Fernandes et al, *Optom Vis Sci*, Mar 2013
 - Over 15 days, MF acuity at D and N improved
 - Monovision acuity remained the same or worsened

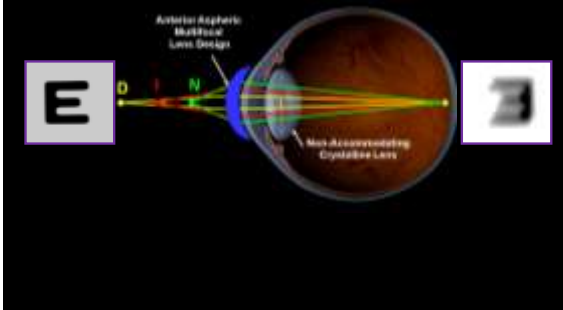
Why wait, when we have all of these options?



Simultaneous Image Designs



Blur Interpretation



Looks can be deceiving!



What if we could see the complexity of the optical design?



Clinical Pearls for Fitting Multifocal SCL

#2 Push plus in the distance, not at near!

- Do not provide more add power than necessary.
- Prescribe the add power as you would for flat top or executive bifocals.

Proclear 1 Day Multifocal

Lens selection guide

Step 1. Confirm refraction and determine eye dominance.

Step 2. Choose the eye (the dominant eye) to be the distance eye. Best performance may be achieved by adding +0.25 to the lens power.

Patient's ADD	Best Result
+1.00 to +1.25	+0.25 to +0.50
+1.25 to +1.50	+0.50
+1.50 to +1.75	+0.75 to +1.00

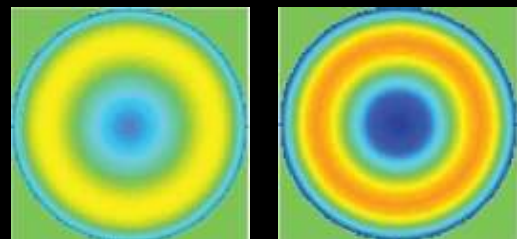
Example refraction: -1.00 DS + 0.25 ADD

Distance: -1.00 DS (multifocal design)

Intermediate: -1.00 DS

Near: +0.25 DS

Aspheric Center Near Designs

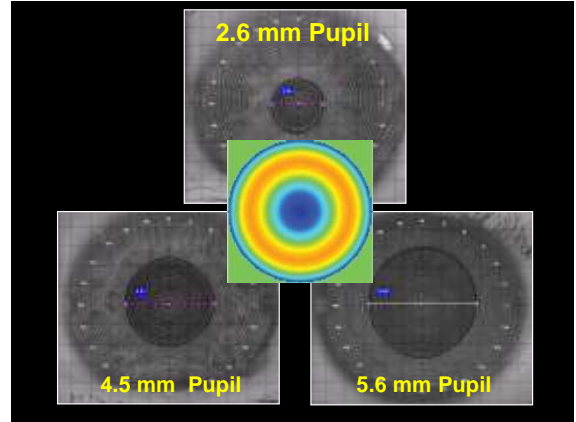


Low Add

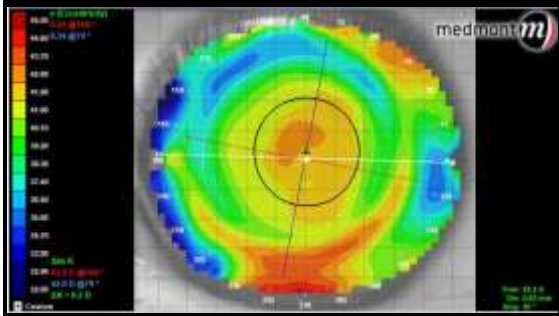
High Add

Pupil Size and Age

Age (Years)	Daylight Diameter	Nighttime Diameter
20	5.0	8.0
40	4.0	6.0
50	3.5	5.5
60	3.0	4.25
70	2.5	3.0
80	2.0	2.5



Corneal Mapping over CL Aspheric Center Near Design (High Add)



Balanced Progressive Technology Multifocal Fitting Guidelines

Step 1 Start with a new refraction and verification of eye dominance (fogging technique)

Step 2 Select the distance prescription based on spherical equivalent corrected for the vertex distance
Choose D or N lens design based on needed ADD power:

ADD	Dominant eye	Non-Dominant eye	Visual Acuity Expectations when using D and N Lens Combinations
+1.00	D	D	
+1.50	D	D	
+2.00	D	N	
+2.50	D	N	

Step 3 Allow patients to adapt to lenses for 15 minutes before assessing vision
If binocular vision is unacceptable, perform a monocular over refraction to determine which eye needs improvement
To improve distance vision add -0.25D (up to +/-0.50D) to the eye that needs improvement
To improve near vision add +0.25D (up to +/-0.50D) to the eye that needs improvement

Tips Prescribe maximum plus power for distance vision (Do not over minus)
Choose the lower ADD power when possible; not necessary to overprescribe the ADD power
Test patient's near function vision with their cell phone
Check visual acuity with room lights on

Biofinity Multifocal

Material:	comfilcon A
Base Curve:	8.6
Diameter:	14.0
Sphere Range:	+6.00 to -8.00 (0.50 steps after -6.00)
ADD Power:	+1.00, +1.50, +2.00, +2.50 "D" and "N"
Water Content:	48%
CT:	.09 (@-3.00)
Dk	128
Dk/t	142
Replacement	Monthly
Wearing Schedule	EW (up to 6 nights/7 days) or DW

Proclear Multifocal XR

Material:	omafilcon A
Base Curve:	8.4 & 8.7
Diameter:	14.4
Sphere Range:	+20.00 to -20.00 (0.50 steps after -6.50)
ADD Power:	+1.00 to +4.00 (0.50 steps) "D" and "N"
Water Content:	59%
Replacement	Monthly
Wearing Schedule	DW

Clinical Pearls for Fitting Multifocal SCL

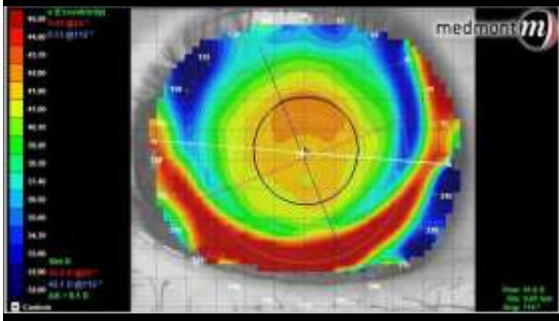
#3 If the lens doesn't fit, you might as well quit.

- A more sophisticated optical device requires a more precise fit.

CL Too Flat



Topography over a High Riding Aspheric Multifocal



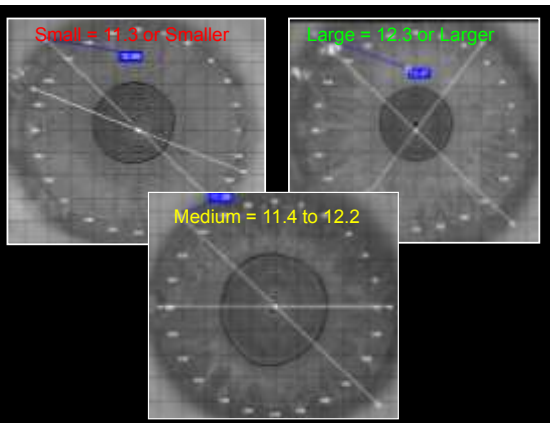
Sagittal Height and OCT



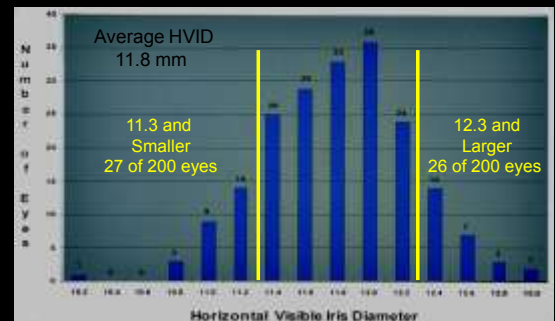
Small = 11.3 or Smaller

Large = 12.3 or Larger

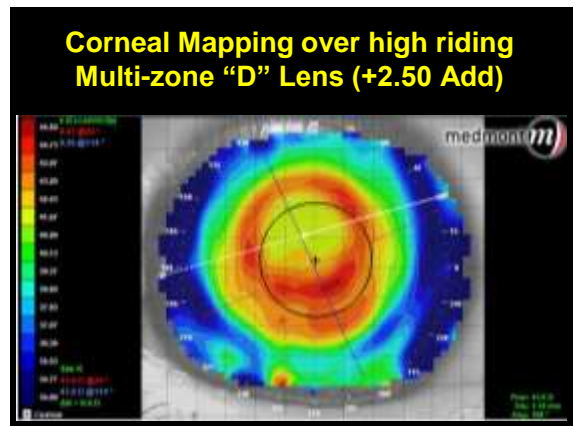
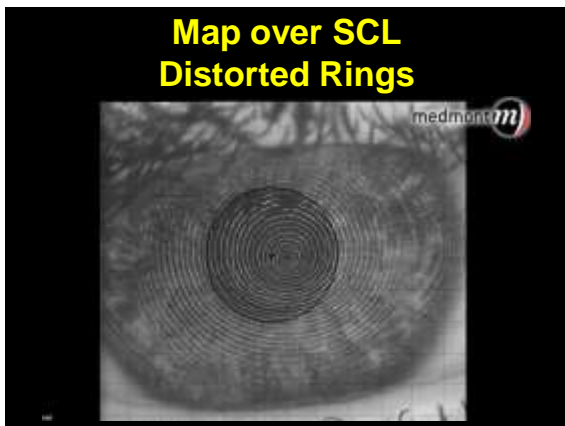
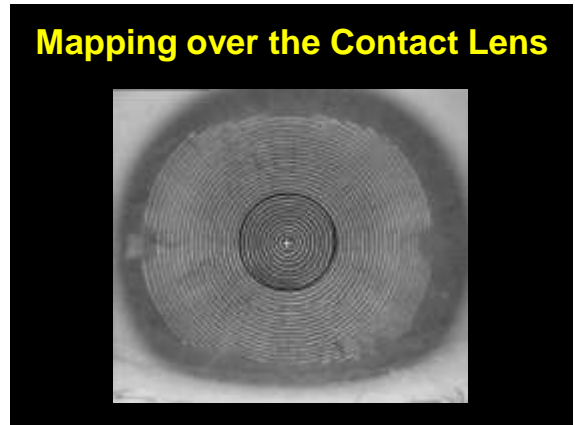
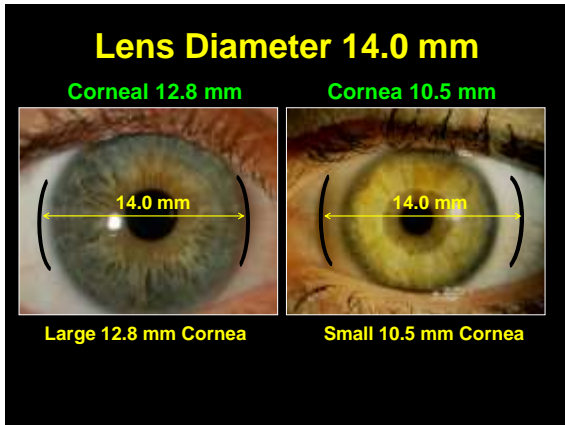
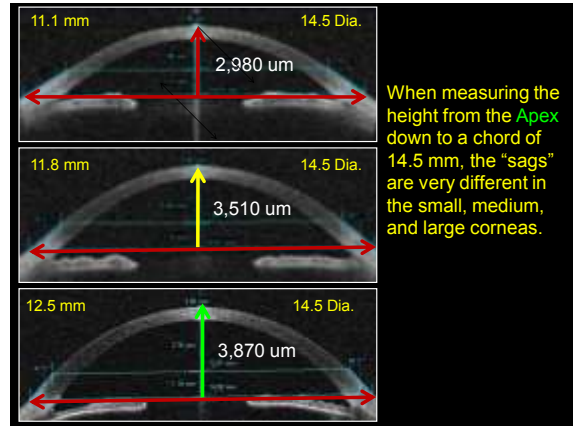
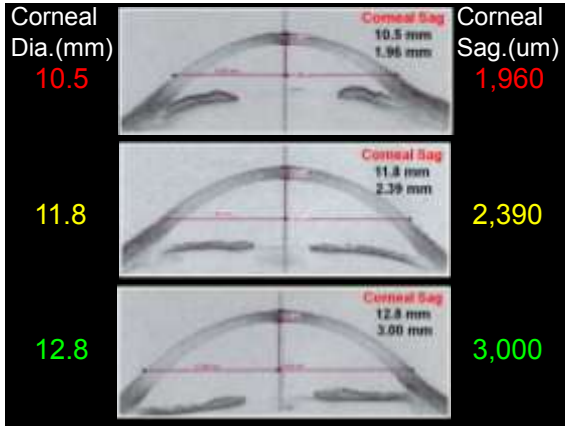
Medium = 11.4 to 12.2



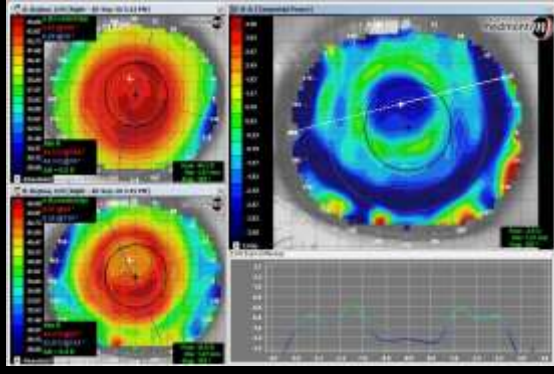
200 Consecutive Right Eyes



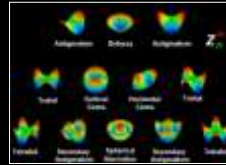
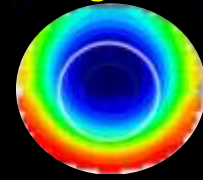
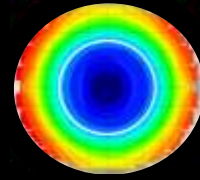
53 of 200 patients would most likely benefit from a Custom Soft Contact Lens Diameter



Difference Display -3.00 (+2.50 Add)

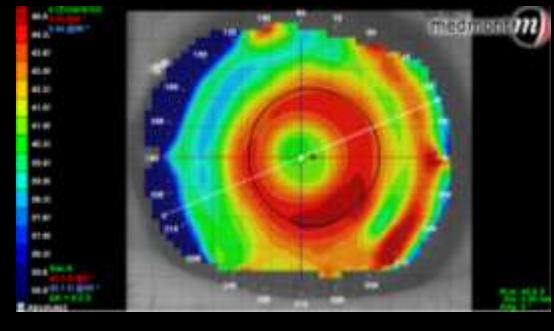


Multi-Zone Design

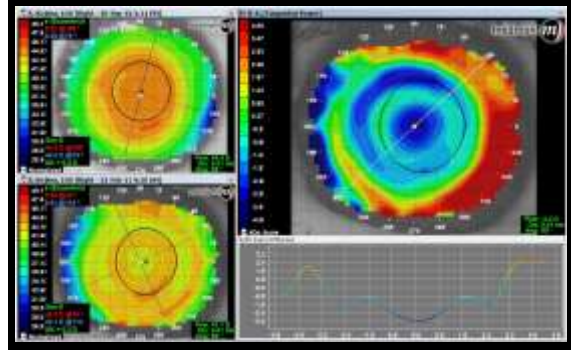


- Radial Astigmatism
- Vertical Coma
- Spherical Aberration

Corneal Mapping over centered Multi-zone "D" Lens (+2.50 Add)

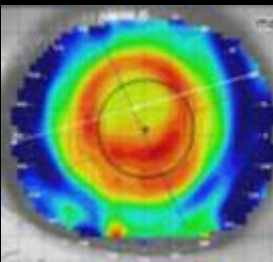


Difference Display -3.00 (+2.50 Add)



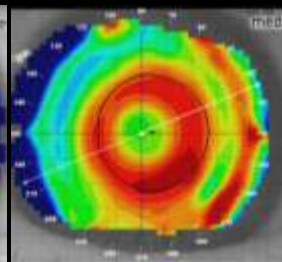
High Riding Lens

8.7 Base Curve



Centered Lens

8.4 Base Curve

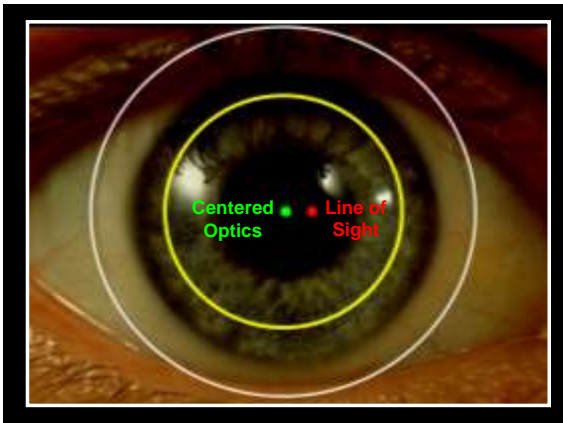
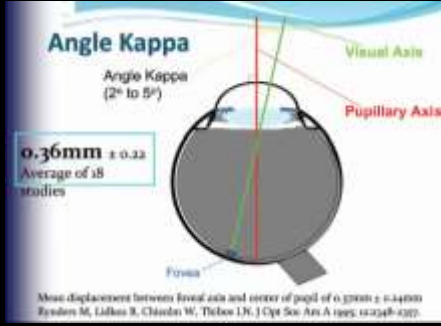


Clinical Pearls for Fitting Multifocal SCL

#4 Be suspicious of unexpected over-refractions.

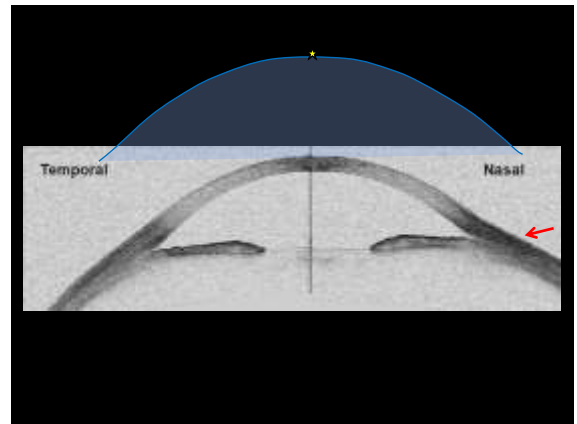
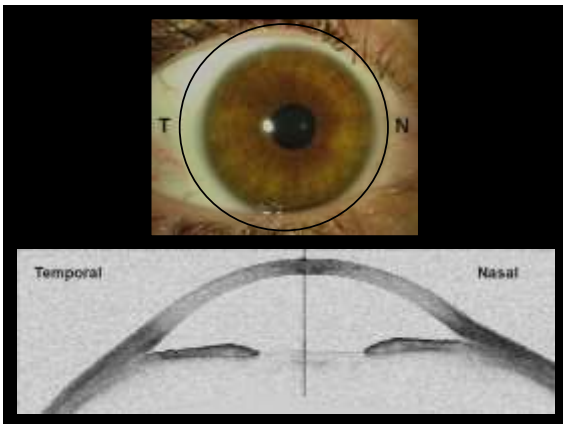
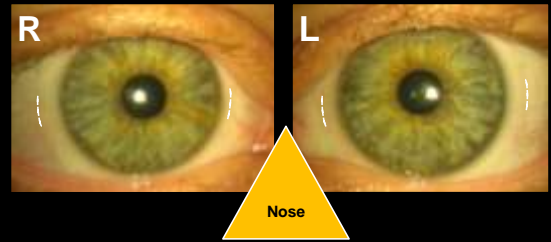
- Check for poor fitting or de-centered lenses.
- Line of sight issues.

Visual Axis and Angle Kappa

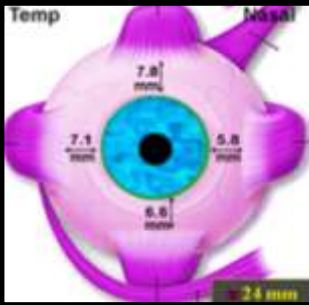


Soft Lens Centration Based on Scleral Measurement

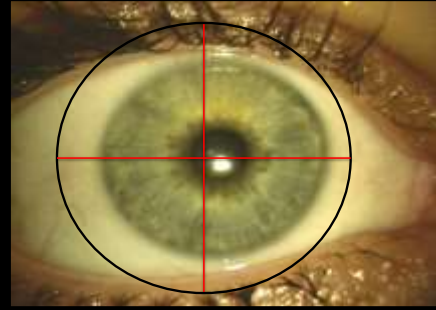
Walker, M. et al. 2013



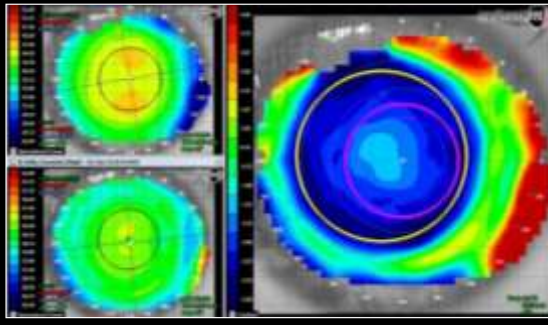
Medial Rectus Insertion



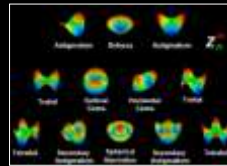
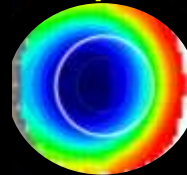
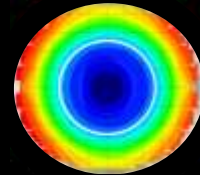
Temporally Displaced Right Lens



Difference Display over CL Aspheric Center Near Design



Anterior Aspheric Optics



- Radial Astigmatism
- Horizontal Coma
- Spherical Aberration

Optical Centration in Refractive Surgery

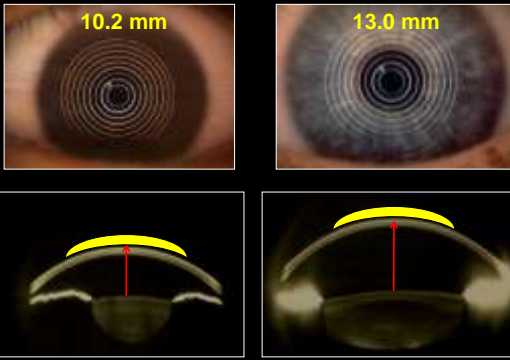
Study	Subjects	Context	Outcome
Wachler et al.	N=1	Lasik corneal ablation: pupillary axis VS. corneal light reflex	Significantly better visual outcome when optics centered over the corneal light reflex
Chat et al.	N=21	LASIK centered over the corneal light reflex instead of the pupillary axis in hyperopic eyes	Significantly better visual outcome when optics centered over the corneal light reflex
Arbelaez et al.	N=53	Compared ablation zone between corneal vertex and pupil centered	Less induced ocular aberrations and asphericity when angle kappa was accounted for
Khakshoor et al.	N=348	Compared small (less than 5 degrees) vs large angle kappa values pre-LASIK	Utilizing corneal light reflex as ablation center: better refractive outcomes, especially with large angle kappa
Kermani et al.	N=170	Retrospective review of post LASIK patients: ablation centered on corneal light reflex vs pupillary axis	Significant reduction in induced coma aberration in those who had ablation centers closer to the corneal light reflex
Prakash et al.	N= 76	Retrospective review on dissatisfied patients with multifocal IOL and their pre-surgical angle kappa values	Patients who had complaints about glare and halo showed a positive correlation with pre-operative angle kappa values.
Park et al. (2012) Moshirfar et al. (2013)	NA	Large literature review on angle kappa and its relevance in refractive surgery	Compensating for angle kappa in refractive surgery, especially in hyperopes is of significant importance for visual prognosis

Clinical Pearls for Fitting Multifocal SCL

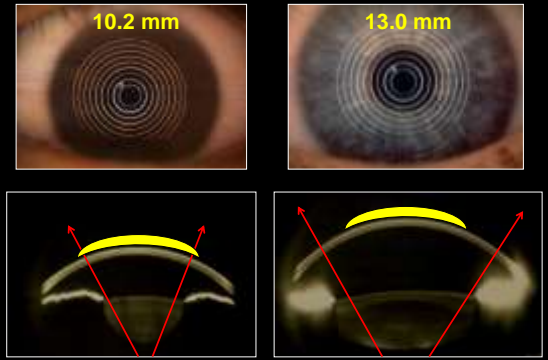
#5 Complaints of haloes, glare and/or ghosting may not be entirely related to pupil size.

- Sagittal height may be a contributing factor.
- Line of sight issues.

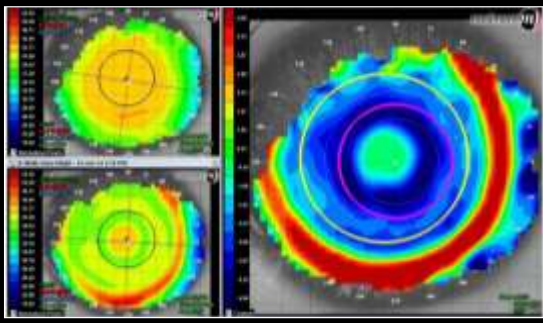
The Effect of Sagittal Height



The Effect of Sagittal Height



Difference Display over Center Near Multi-zone Design (+2.50 Add)



Clinical Pearls for Fitting Multifocal SCL

#6 Read the "Fitting Guide" and utilize consultation services.

STEP 2
Lens selection

Starting with Best Sphere for distance vision use the table below to select the initial trial lens:

Ocular Dominance	Spectacle ADD: +0.75 to +1.75	Spectacle ADD: +2.00 to +2.25	Spectacle ADD: +2.50 and over
Hyperopic	DS LOW	BS +0.75 LOW	BS +0.75 LOW
Non Dominant Eye	BS +0.25 LOW	BS +0.50 LOW	BS +0.25 HIGH
Myopic	Dominant Eye	BS LOW	BS LOW
Emmetropic	Non Dominant Eye	BS LOW	BS +0.25 HIGH

Fitting guidelines for initial lens selection for starting 1 day multifocal:
BS = Best Sphere; LOW = Low ADD; HIGH = High ADD.

Clinical Pearls for Fitting Multifocal SCL

#7 Don't ignore the astigmatic error.

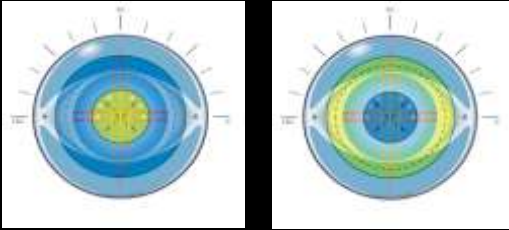
- Vertex the spectacle Rx to the corneal plane.
- Do not over-correct for the astigmatism.
- Lens fit is critical.

Toric Multifocal Soft Contact Lenses



Proclear Toric Multifocal

The lens is a double slab off back toric with markings at 3 & 9 o'clock



Proclear Toric Multifocal

Material:	omafilcon A
Base Curve:	8.4 & 8.8
Diameter:	14.4
Sphere Range:	+20.00 to -20.00 (0.50 steps after -6.50)
Cylinder Power:	-0.75 to -5.75 (0.50 steps)
ADD Power:	+1.00 to +4.00 (0.50 steps) D Lens and N Lens
Axis	5° to 180° (5° steps)
Water Content:	59%
Replacement	Monthly (DW)

Clinical Pearls for Fitting Multifocal SCL

#8 Use a cell phone to assess near functional vision.

- Immediate feedback
- Everyday tasks that are important to the patient
- Demonstrate the area of near vision.

Clinical Pearls for Fitting Multifocal SCL

#9 Refit monovision patients one eye at a time.

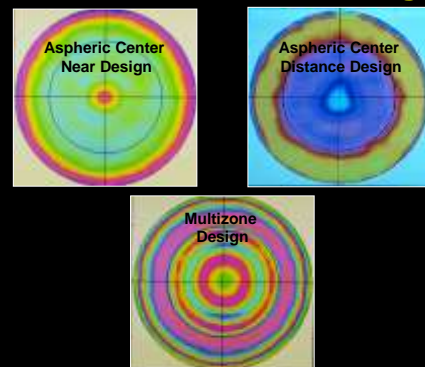
- Refit non-dominant eye with a multifocal first.
- Refit dominant eye after patient has adapted.
- Works for emmetropes as well.

Clinical Pearls for Fitting Multifocal SCL

#10 Reach final Rx in 1-2 visits.

- Making small changes in lens Rx can make a significant difference.
- Additional visits may not improve vision.
- Identify cause of vision issues and learn from your failures.

Soft Multifocal Lens Designs



2016 VA Optometric Residents

CLINICAL CASES

“Microinvasive Glaucoma Surgery”

Valerie Kitamori, OD

“To Doppler or Not To Doppler: OIS vs. DR”

John Creger, OD

“Cataract Surgery: Potential Complications
Despite Advancements in Surgical Procedures”

Megan Szarkowski, OD

Microinvasive Glaucoma Surgery

Valerie S. Kitamori, OD

Spokane VA Medical Center, WA
Department of Veterans Affairs
4815 N Assembly St, Spokane, WA 99205
Email: kita4016@pacificu.edu

Microinvasive Glaucoma Surgery

Description: This course presents a review of the current advancements in the surgical management of glaucoma.

Learning Objectives: By the end of the presentation, attendees will be able to:

1. Recognize the principles of Microinvasive Glaucoma Surgery
2. Identify problems with traditional glaucoma medical and surgical treatments
3. Distinguish ideal candidates that may benefit from Microinvasive Glaucoma Surgery
4. Describe current and future Microinvasive Glaucoma Surgery procedures

Principles of Microinvasive Glaucoma Surgery:

- Ab interno microincisional approach
- Minimally traumatic to the target tissue
- Modest procedure efficacy
- Extremely high safety profile
- Rapid recovery with minimal impact on patient's quality of life

Problems with traditional glaucoma medical and surgical treatments:

- Suboptimal safety profile with high long term rate of failure
- Long term exposure to preservatives in antiglaucoma medications limit surgical effect

Ideal candidates for Microinvasive Glaucoma Surgery:

- Mild to moderate glaucoma with modest targeted intraocular pressure reduction
- Concomitant visually significant cataracts

Microinvasive Glaucoma Surgery Procedures:

- Bypassing the Trabecular Meshwork:
 - o Trabecular Microbypass Stent (iStent)
 - o Ab Interno Trabeculotomy (Trabectome)
 - o Ab Interno Excimer Laser Trabeculotomy (ELT)
 - o Gonioscopy-Assisted Transluminal Trabeculotomy (GATT)
- Device Placement within the Suprachoroidal Space:
 - o Suprachoroidal Microstent (Cypass)

- Gold Microshunt
- Expansion or Stenting of Schlemm's Canal:
 - Schlemm's Canal Scaffold (Hydrus)
 - Ab Externo Canaloplasty
 - Stegmann Canal Expander (SCE)
- Shunting to the Subconjunctival Space:
 - Subconjunctival Implant (Aquesys)
- Reduction of Aqueous Production
 - Endoscopic Cyclophotocoagulation (ECP)

Future Steps/Innovations

To Doppler or Not To Doppler: OIS vs DR

John Creger
Mann-Grandstaff VA Medical Center
4815 N. Assembly St.
Spokane, WA 99205
Phone: (509) 434-7032
Fax: (509) 434-7132
creg0164@pacificu.edu

Course description

This course presents a review of ocular ischemic syndrome, including diagnosis and management, and a comparison to diabetic retinopathy using case examples.

Objectives

- Review signs and symptoms of diabetic retinopathy with an emphasis on peripheral retinal changes.
- Review of Ocular Ischemic Syndrome
- Comparison of diabetic retinopathy to ocular ischemic syndrome findings and indications of a carotid Doppler.

Outline

- OIS Case #1
 - 69 YOWM in for diabetic eye exam.
 - A1c of 8.1
 - Mid-peripheral hemorrhages 360 OU
 - No retinopathy in posterior pole
- Ocular Ischemic Syndrome
 - Pathophysiology
 - Signs and Symptoms
 - Treatment
- Peripheral Diabetic Retinopathy
 - Pathophysiology
 - Indication for progression to PDR
 - Treatment
- Carotid Doppler Review
 - Procedure
 - Results
- Diabetic retinopathy vs ocular ischemic syndrome
 - Monocular vs binocular findings
 - Neovascularization, who is really to blame
- OIS Case #2
 - 71 YOWM in for diabetic eye exam
 - History of trauma OD causing retinal detachment and hypermature cataract.
 - A1c of 6.2
 - Painless/symptomless iris neovascularization and hyphema
- Review of Objectives
- Conclusion

Cataract Surgery: Potential Complications Despite Advancements in Surgical Procedures

Megan Szarkowski, O.D.
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Cataract Surgery Advancements

- phacoemulsification
- ICCE ==> ECCE
- large incision ==> small incision
- clear corneal incision (CCI)
- Femtosecond laser assisted cataract surgery (FLACS)

Cataract Surgery in America

- affects over 24 million Americans age 40 and older
- 3.6 million cataract procedures performed in the United States in 2015
- 50 million Americans projected to have cataracts by the year 2050
- more individuals having cataract surgery at a younger age
- preventblindness.org

Cataract Surgery Advancements (continued)

- premium/"advanced technology" IOLs
 - accommodating, multifocal, toric, toric accommodating



Crystallens™



AcrySof® ReSTOR®



Tecnis® Multifocal

Aging Changes to the Crystalline Lens

- changes in structure of plasma membrane and degradation of cytoskeletal components contribute to nuclear sclerosis
- change in permeability ratio of Na⁺:K⁺ correlates with increase in optical density of the lens
- absorption of both UV and visible light by the lens increases with age

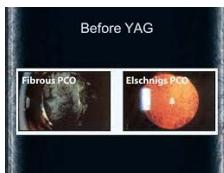
Cataract Surgery Advancements (continued)

- limbal or corneal relaxing incisions (LRI/CRi)
- Optiwave Refractive Analysis (ORA)
- TrueVision



Potential Complications

- striate keratopathy
- subconjunctival hemorrhage
- hyphema
- posterior capsular opacification (PCO)

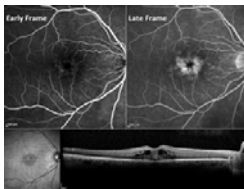


Potential Complications (continued)

- wound leak
- Toxic Anterior Segment Syndrome (TASS)
- retained lens fragments
- elevated IOP
- residual refractive error

Potential Complications (continued)

- anterior capsular opacification
- cystoid macular edema (CME/Irvine-Gass)

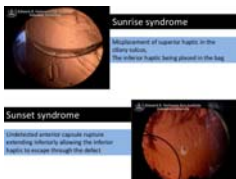


Additional considerations

- pseudoexfoliation (PXF) ==> zonular dialysis
- Intraoperative Floppy Iris Syndrome (IFIS)
- history of acute or chronic uveitis
- severe blepharitis or dry eye syndrome

Potential Complications (continued)

- endophthalmitis
- pseudophakic retinal detachment (RD)
- lens subluxation



Additional Considerations (continued)

- Fuch's endothelial dystrophy
- blood thinners
- Diabetes Mellitus
- glaucoma

Pre-operative testing considerations

- IOL master
- corneal topography
- macula OCT
- pachymetry

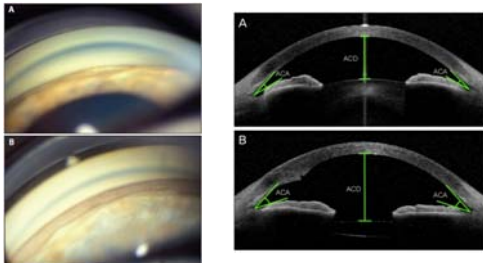
Pre-operative testing considerations (continued)

- ocular surface preparation



Pre-operative testing considerations (continued)

- gonioscopy
- anterior segment OCT



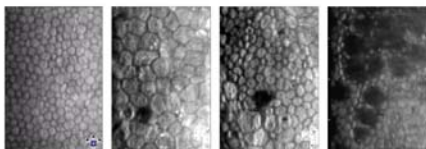
Thank you!

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Spokane, WA
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Pre-operative testing considerations (continued)

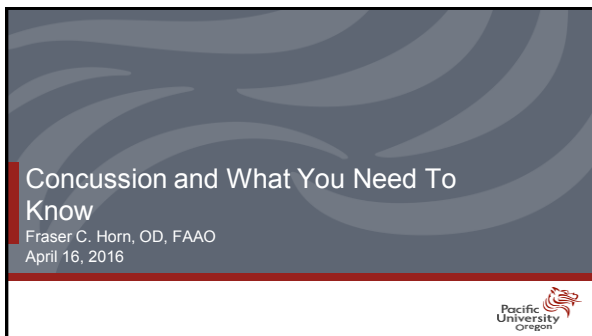
- specular microscopy

Cornea Endothelium




Normal Endothelium High Cell Density Very Low Density High Surgical Risk Polymegethism EW Contact Lenses Stage 3 Guttata Normal Cell Count

Konan CellChek® Specular Microscope Imaging




Concussion and What You Need To Know

Fraser C. Horn, OD, FFAO
April 16, 2016




Disclosure(s)

- I have consulted for Nike
 - I do not receive any direct or indirect benefits for this presentation




How many of you have sustained a concussion?



Concussion Definition

- CDC
 - A type of traumatic brain injury—or TBI—caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth.
 - This sudden movement can cause the brain to bounce around or twist in the skull, stretching and damaging the brain cells and creating chemical changes in the brain.



Concussion Definition

- Consensus Statement
 - Concussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces.
 - Several common features that incorporate clinical, pathologic and biomechanical injury constructs that may be utilized in defining the nature of a concussive head injury

Concussion Definition

- **Functional Disturbance rather than structural**
- Rapid onset of short-lived impairment of neurological function that resolves spontaneously
- Resolution of clinical and cognitive symptoms typically follows a sequential course
- Symptoms may be prolonged
- May or may not involve loss of consciousness

Consensus Statement

- History
 - Concussion had many different definitions and criteria
 - Developed a standardized definition and discussion on Concussion

Consensus Statement

- 1st – 2001 in Vienna
 - International Ice Hockey Federation (IIHF)
 - Federation Internationale de Football Internationale (FIFA) Medical Assessment and Research Center
 - International Olympica Committee Medical Commision (IOC)

Consensus Statement

- 1st – 2001 in Vienna
 - Gather leading medical experts from all over the world and from a wide sampling of sport
- Objective
 - To provide recommendations for the improvement of safety and health of athletes who suffer concussive injuries in ice hockey, football (soccer), and other sports

Br J Sports Med 2001;35:367–377; Br J Sports Med 2002 36: 6-7



Consensus Statement

- 1st – 2001 in Vienna
 - Presentations from various sports and disciplines
- Small group tasked to “draft a document t describing the agreement position reached by those in attendance at that meeting”

Br J Sports Med 2002 36: 6-7



Consensus Statement

- 1st – 2001 in Vienna
 - Two main outcomes:
 - Comprehensive systematic approach to concussion (Concussion Protocol)
 - Clinical history
 - Evaluation
 - Neuropsychological testing
 - Imaging procedures
 - Research methods
 - Management and rehab
 - Prevention
 - Education
 - Future directions
 - Medicolegal considerations

Br J Sports Med 2002 36: 6-7



Consensus Statement

- 1st – 2001 in Vienna
 - Two main outcomes:
 - Definition of concussion (shown previously)
 - Concussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces.
 - Several common features that incorporate clinical, pathologic and biomechanical injury constructs that may be utilized in defining the nature of a concussive head injury include

Br J Sports Med 2002 36: 6-7



Consensus Statement

- 2nd – Prague 2004
 - Updated the definition a little
 - Added simple vs. complex concussion
 - Developed the Sport Concussion Assessment Tool (SCAT)
 - Discussed further refinement of the systematic approach to concussion

Br J Sports Med. 2002;36: 6-7



Consensus Statement

- 3rd – Zurich 2008
 - Refined definition of concussion
 - Eliminated simple vs. complex concussion
 - Retained concept that 80-90% of concussions resolve in 7-10 days
 - Updated the Sport Concussion Assessment Tool (SCAT-2)

SAJSM Vol 21 (2); 2009



Consensus Statement

- 3rd – Zurich 2008
 - Further definition of...
 - Concussion evaluation
 - Concussion investigations (neuroimaging, neuropsychological assessment, etc)
 - Concussion management
 - Especially return to play
 - Modifying factors in concussion (loss of consciousness, depression)
 - Special Populations
 - Injury Prevention

SAJSM Vol 21 (2); 2009



Consensus Statement

- 4th – Zurich 2012

SAJSM Vol 21 (2); 2009



Consensus Statement

- 4th – Zurich 2012
 - Refined definition of concussion
- Updated the Sport Concussion Assessment Tool (SCAT-3)
 - Added a child's version

Br J Sports Med 2011; 47: 250-258.



Consensus Statement

- 4th – Zurich 2012
 - Further definition of...
 - Concussion evaluation
 - Concussion investigations (neuroimaging, neuropsychological assessment, etc)
 - Concussion management
 - Especially return to play
 - Modifying factors in concussion (loss of consciousness, depression)
 - Special Populations
 - Injury Prevention

Br J Sports Med 2011; 47: 250-258.



Let's look at a concussion

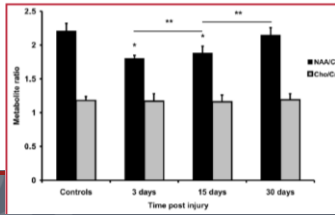
Neurological Changes

- Neurological Changes
 - Brain is injured in concussion
 - Leads to symptoms
 - Look at metabolic process find that N-Acetyl Aspartic Acid is decreased after brain injury
 - This is a marker for neuronal integrity



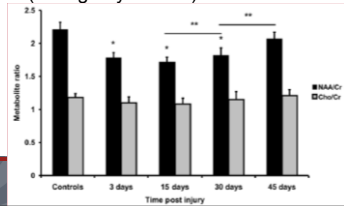
Neurological Changes

- There is a delayed metabolic recovery after concussion



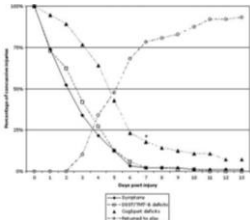
Neurological Changes

- There is a delayed metabolic recovery after 2nd concussion (during days 10-13)



Concussion Recovery

- Clinical symptoms recover more quickly than metabolic / functional recovery



Concussion Symptoms

<http://dthoustonanderson.com/concussion-management-much-more-than-sleeping-post-1/>

PHYSICAL

- ✓ Headache
- ✓ Nausea and vomiting
- ✓ Balance problems
- ✓ Slowed reaction time
- ✓ Dizziness
- ✓ Sensitivity to light
- ✓ Sensitivity to sound
- ✓ Fuzzy or blurry vision

MOOD DISRUPTION

- ✓ More emotional
- ✓ Irritable
- ✓ Sad
- ✓ Nervous
- ✓ Depressed

SLEEP

- ✓ Sleeping more or less than usual
- ✓ Trouble falling asleep
- ✓ Feeling fatigued or drowsy

THINKING AND REMEMBERING

- ✓ Difficulty concentrating
- ✓ Difficulty remembering
- ✓ Confusion
- ✓ Feeling "mentally foggy"
- ✓ Feeling slowed down

Most common vision related signs and symptoms

Including, but not limited to:

- Blur
- Asthenopia
- Photophobia
- Accommodation
 - » Spasm
 - » Infacility
- Vergence
- EOMs
 - » Saccades
 - » Pursuits
- Pupils
- Visual Fields
- Possible traumatic effects on the eye

Evaluation Tools

- **SCAT 3**
 - Developed by consensus statement
- Sideline tool

Evaluation Tools

- ImPact Test (impacttest.com)
 - Computerized concussion evaluation system.
 - Neurocognitive assessment tools and services



Evaluation Tools

- Balance Error Scoring System (BESS)
 - Postural stability
 - 3 stances on two types of surfaces

<http://kncwconcussion.org/wp-content/uploads/2011/06/BESS.pdf>



BESS

Errors:

- Moving the hands off the hips
- Opening the eyes
- Step, stumble or fall
- Abduction or flexion of the hip beyond 30°
- Lifting the forefoot or heel off of the testing surface
- Remaining out of the proper testing position for greater than 5 seconds

The maximum total number of errors for any single condition is 10.

If a subject commits multiple errors simultaneously, only one error is recorded.

Airex™ Foam Balance Pads available at www.power-systems.com or through most sporting goods stores.

B.E.S.S. SCORECARD		
Count Number of Errors max of 10 each stance/surface	FIRM Surface	FOAM Surface
Double Leg Stance (feet together)		
Single Leg Stance (non-dominant foot)		
Tandem Stance (non-dominant foot in back)		
TOTAL SCORES: total each column		
B.E.S.S. TOTAL: (Firm+Foam total)		

BESS is a registered trademark of the University of Oregon Center for Health, Safety and Performance.

Evaluation Tools

- King-Devick Test
 - Objective, physical method of evaluating visual tracking and saccadic eye movements.
 - Based on the time to perform rapid number naming

<http://kingdevicktest.com/about/>

Evaluation Tools

- Others
 - Blood test
 - Breath analysis
 - Many others

Return to Play

- No Gold Standard for this
- Initial period of cognitive and physical rest
- Concussion rehab
 - Eventual ramp up of return to school
 - Eventual ramp up of return o play

Return to Play

- Prolonged symptoms require interprofessional approach



Return to Play

- MUST be a clinical decision
 - Supported by consensus statements
 - Guided by computerized testing
 - Symptom rating scales
 - When in doubt, sit them out



Table 1 Graduated return to play protocol

Rehabilitation stage	Functional exercise at each stage of rehabilitation	Objective of each stage
1. No activity	Symptom limited physical and cognitive rest	Recovery
2. Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity <70% maximum permitted heart rate No resistance training	Increase HR
3. Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities	Add movement
4. Non-contact training drills	Progression to more complex training drills, eg, passing drills in football and ice hockey May start progressive resistance training	Exercise, coordination and cognitive load
5. Full-contact practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6. Return to play	Normal game play	

Consensus statement 2012



Optometry's Role



Considerations for Concussion Exam

- When do we get involved?
- Dr. Keith Smithson defined levels of involvement:
 - Levels 1 - 3

Considerations for Concussion Exam

- Dr. Smithson's levels – Level 1
 - Refractive error compensation – even small amounts, esp cyl
 - Consider transient shifts in error
 - Photochromics
 - Tints – blue blocking; tints that relieve symptoms
 - Rose, amber, blue



Considerations for Concussion Exam

- Dr. Smithson's levels – Level 2
 - Evaluate for binocular or accommodative anomalies
 - Helps to have a baseline
 - Evaluate saccadic and pursuit movements
 - Prescribe prism or muscular based VT if appropriate
 - If uncomfortable with this, refer to a colleague

Considerations for Concussion Exam

- Dr. Smithson's levels – Level 3
 - Concepts of neuroplasticity – repetition, multi-sensory input
 - Neurovisual rehabilitation (ex. SVI)
 - Multiple object tracking (Neurotracker)
 - Multisensory reintegration (NVR)



An Example of Concussion Vision Testing

- From Dr. Kevin Loopeker at Fortius Sport & Health
 - Baseline concussion testing
 - Questionnaire
 - SCAT 3
 - Balance – BESS Protocol
 - Cognigram Cognitive Testing
 - Reaction Stick Ruler Test (x 8)
 - Cervical Spine – Range of Motion, Strength and Stability, Proprioception

Loopeker, Kevin. Concussion Panel, Optometry's Meeting 2015



An Example of Concussion Vision Testing

- From Dr. Kevin Loopeker at Fortius Sport & Health
 - King-Devick Test
 - NPC (Break/Recovery) x3
 - Accommodative Target
 - Fixation Disparity (Lederer, Biberdorf. Vision Dev & Rehab. 2015; 1(1): 46-60)



An Example of Concussion Vision Testing

- From Dr. Kevin Loopeker at Fortius Sport & Health
 - Vestibular/Ocular Motor Screening (VOMS): University of Pittsburgh Medical Center: (Am J Sports Med. 2014 Oct; 42(10): 2479-2486)
 - Provoked Symptomology: HA, Dizzy, Nausea, Foggy
 - Pursuits: Horizontal & Vertical
 - Saccades: Horizontal & Vertical
 - NPC (x3)
 - Vestibular Ocular Reflex: H&V
 - Visual Motion Sensitivity

"A combination of VOR, VMS & NPC scores resulted in a positive prediction rate of 0.89 for identifying concussions"



Considerations for Exam

- Communication
 - Patient (parent?)
 - Trainer
 - Coach
 - PCP
 - Other health professionals

- Case #1 – My head hurts



5 Keys for Sports Vision in the Primary Care Practice

Fraser C. Horn, O.D., F.A.A.O.
April 16, 2016



Disclosure(s)

- I have consulted for Nike
 - I do not receive any direct or indirect benefits for this presentation



5 Keys

1. Sport Analysis
2. Case History
3. Visual Analysis
4. Visual "Correction"
5. Interprofessional Collaboration



Situation

- We have patients who play sports and are involved with activities
- Our job is to make sure that we assess the patient to maximize visual function



Key #1 - Sport Analysis

- Sport Analysis
 - What are the visual skills related to a sport / activity?
 - Which of these visual skills are...
 - critical?
 - important?
 - negligible?
 - "correctable"?
 - trainable?

Key #1 - Sport Analysis

- Sport Analysis
 - Example
 - 2018 Winter Games added 4 new sports:
 - Curling - mixed doubles (M&W);
 - Speed skating mass start (M/W);
 - Alpine skiing nations team event (M&W); and
 - Snowboard big air (M/W)
 - What is snowboard big air?

Key #1 - Sport Analysis

- Snowboard Big Air
 - Competitors attempt to fly off a highly pitched ramp and perform jumps with multiple flips and spins, while trying to complete as many jumps as possible in the time allotted

<http://www.si.com/more-sports/2015/06/08/2018-winter-olympics-new-sports-added>

Audience Participation

- What visual skills are important in Snowboarding Big Air?

Key #1 - Sport Analysis

- Best ways to find out more info on sport...
 - Personal Participation
 - In-person Observation / Discussion
 - Video of the Sport
 - Television / Movies ????

Key #1 - Sport Analysis

- One needs to analyze what visual skills and risks are involved with a sport
 - This will provide a "road map" for your SV specific exam
 - Ex. Eye-hand reaction may not be important in golf, but may be critical in Lacrosse

Analysis of sport

- Skills to consider:
 - Static vs. dynamic
 - Snooker vs. Lacrosse
 - Central vs. peripheral awareness
 - Target shooting vs. ice hockey
 - Target size
 - Wrestling vs. darts



www.sportindustry.biz

Analysis of sport

- Skills to consider:
 - Contrast levels
 - Indoors vs. outdoors (sunny vs. overcast)
 - Gaze angle
 - Cycling vs. basketball




www.stoke.blog36.com



www.foxsports.com


Key #2 – Case History

- Case History
 - More than...
 - “Do you play any sports? And, if so, are you having any problems with your vision?”




Key #2 - Case History

- Case history
 - Identify level & frequency of play
 - Location of sport
 - Eyewear utilized
 - Eye Care history




www.gastx.com

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Key #2 - Case History

- Case history
 - Performance specific questions...
 - Does vision ever compromise your performance?
 - Do you ever have difficulty with...
 - Timing?
 - » Depth perception?
 - » Tracking?
 - » Anticipation?



www.mlb.com


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Key #2 - Case History

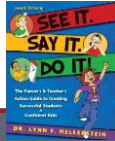
- Case history
 - Performance specific questions...
 - Do you ever feel like you have minimal gain in performance even if you train hard?
 - Do you ever feel like your performance becomes inconsistent during difficult times during your game?

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Key #2 - Case History

- Case history
 - Performance specific questions...
 - Do you utilize visualization or imagery techniques?
- Can tailor for your athlete



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Key #3 – Visual Analysis

- Want to assess...
 - What is relevant to the sport
 - What we can correct or train



Key #3 – Visual Analysis

- Static Visual Acuity
 - Preferred style of chart is LogMAR
 - Can use ETDRS grading
 - Utilize a chart that tests to at least 20/10 or lower
 - Test in both primary gaze and any sport related gaze (ex. receiving stance)



www.nei.nih.gov

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Key #3 – Visual Analysis

- Static Visual Acuity
 - Goal is to improve VA to a maximum level for each athlete
 - 20/15 or better OD, OS, OU¹

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Key #3 – Visual Analysis

- Static Visual Acuity
- Literature support:
 - AAU Junior Olympics²
 - 71.9% of athletes corrected to 20/20 or better
 - MLB³
 - 77% had acuity of 20/15 or better
 - Optometric Evaluation of Elite Athlete⁴
 - Monocular mean = 20/18.7 ± 6.4
 - Binocular mean = 20/16.9 ± 3.4

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Key #3 – Visual Analysis

- Visual Acuity
 - Very few things are static in sport
 - Preferred type of VA assessment is dynamic visual acuity
 - Tough to evaluate in most primary care settings

Key #3 – Visual Analysis

- Dynamic Visual Acuity
 - One study
 - Compared DVA in athletes vs. non-athletes in a “tracking mode vs. fixation mode
 - Fixation mode – No difference
 - Tracking mode – better DVA in athletes

Key #3 – Visual Analysis

- Dynamic Visual Acuity
 - One Recent study
 - Typically, athletes would make large predictive saccades to follow the target
 - Or
 - Wait until target at the edge of the apparatus, then made efficient catch-up saccades

Key #3 – Visual Analysis

- Contrast Sensitivity Function (CSF)
 - Most tasks in sport have a contrast component
 - Ex. Reading the greens in golf; fly ball on a cloudy day in baseball, etc
 - Studies have shown that the CSF is elevated in athletes^{3-4, 9-11}
 - CSF may be hampered by poor fitting contact lenses¹²⁻¹⁵



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Key #3 – Visual Analysis

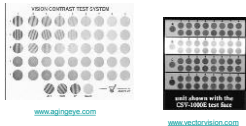
- Contrast Sensitivity Function (CSF)
 - How many of you have computer based VA charts?
 - Do they have a contrast feature?
 - Overall, how many of you assess contrast on your patients...regularly?

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Key #3 – Visual Analysis

- Contrast Sensitivity Function
 - Most use grating patterns
 - Vistech
 - Vectorvision
 - Multiple computer generated designs
 - Want to assess binocularly with correction that is habitually worn during sport
 - If wearing CLs, should check monocular¹



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Key #3 – Visual Analysis

- Contrast Sensitivity Function Recommendations
 - Test before and after you fit with contact lenses
 - Test with any filters¹ (ex. Ski goggles)
 - Perform testing in the conditions filters are utilized (ex. Outdoors for ski goggles)
 - Try to optimize contrast as much as possible

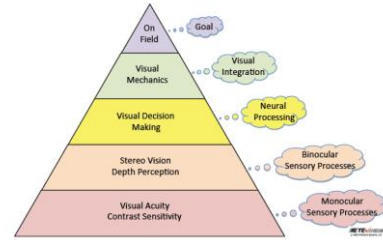
28



Key #3 – Visual Analysis

- 2008 Academy in Anaheim, CA¹⁶
 - Dr. David Kirschen and Dr. Daniel Laby discussed focusing on the “visual fundamentals”
 - Which includes Visual Acuity, Contrast Sensitivity
 - The foundation is based on the monocular components of acuity and contrast
 - The next level is binocular function

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Courtesy of Dr. David Kirschen and Dr. Dan Laby

- At the very least...
 - Maximize visual acuity and contrast sensitivity for all of your patients

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Key #3 – Visual Analysis

- Binocular function
 - Stereoacuity
 - Professional Baseball Players³
 - 81% of the players achieved stereoacuity of 25 seconds of arc or better



www.bercel.com

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Key #3 – Visual Analysis

- Binocular function
 - Stereoacuity



www.bernet.com

- What about using near stereo tests?
 - Boden et al¹⁸ evaluated youth baseball/softball players vs. non-ball players.
 - » Found that ball players had better stereo than non-ball players
 - » Utilized targets up to 20 arc seconds

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Key #3 – Visual Analysis

- Evaluation – Input
 - Binocular function
 - Stereoacuity



www.bernet.com

- Recommendations
 - Ideally want to test distance stereoacuity; however, can use near stereo
 - Need targets that go down to 20 seconds of arc

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Key #3 – Visual Analysis

- Binocular function
 - Cover Test
 - Perform at different angles of gaze¹
 - Ex. Bicyclist – primary and up gaze
 - Brock String
 - Vergence & accommodation facility⁴
 - Near – Far rock test
 - 30 sec vs. 60 sec vs. 120 sec



From Dr. Graham Erickson

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Key #3 – Visual Analysis

- Motilities
 - Pursuits and Saccades
 - There is no ideal way to assess
 - Doctors have utilized:
 - Vistech
 - NSUCO testing
 - Projected DEM
 - A "fast movement" technique
 - And more

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Key #4 – Visual “Correction”

- Perform a thorough refraction
 - Consider demands of their sport
 - Ex. Trap shooter vs. wrestler
 - Don't assume that a small change is “not worth it” to an athlete

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Key #4 – Visual “Correction”

- Prescribing – You may prescribe a “sport specific prescription”
 - This may be¹...
 - 0.25 to 0.50 D extra minus for improved VA and contrast
 - Low amount of cyl or sphere that you may not “normally” prescribe
 - A small amount of plus for relief of visual strain in an athlete with hyperopia

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Key #4 – Visual “Correction”

- Prescribing
 - Dr. Erickson recommends the following guidelines for when to prescribe¹:

Refractive error	Consider prescribing at:
Myopia	-0.25 or more
Hyperopia	+1.00 or more
Astigmatism	-0.50 or more
Anisometropia	-0.50 or more

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Key #4 – Visual “Correction”

- Prescribing
 - Contact Lenses (CLs)
 - Probably the most popular choice for compensation of refractive error in sport
 - CLs reduce many common issues reported by spectacle wearers (ex. Lens fogging, distortion, etc)¹

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Key #4 – Visual “Correction”

- Prescribing (cont)
 - Contact Lenses (CLs)
 - The critical factors with CL fitting are!:
 - Stability
 - Hydration
 - Clarity (VA and CSF)
 - Cleaning regimen



www.daviddarling.info

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Key #4 – Visual “Correction”

- Prescribing (cont)
 - Contact Lenses (CLs)
 - In general, I will primarily fit...
 - Daily disposables
 - Tighter fitting lenses
 - Low to moderate water content lenses
 - Multiple trials until I get optimum clarity and comfort
 - Possibly over-minus for sport



www.daviddarling.info

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Key #4 – Visual “Correction”

- Eye Protection
 - You need to recommend and promote protective eyewear to your athletes
 - This is not only to keep them a two-eyed athlete, but also to keep you in practice



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Key #4 – Visual “Correction”

- Eye Protection
- Protective Eyewear recommendations include
 - Polycarbonate or Trivex lenses
 - Frames that meet and are labeled with the appropriate American Society for Testing of Materials (ASTM) standards
 - F803 for most sports
 - There are sport specific standards
 - F513 – Ice hockey
 - F1776 – Paintball
 - And more



www.daviddarling.info

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Key #4 – Visual “Correction”

- Evaluation – Input
 - Prescribing (cont)
 - Protective Eyewear recommendations
 - It is truly our duty, as eye care providers, to recommend protective eyewear
 - Public health concern
 - Check out statement at <http://www.aaopt.org/about/policy/upload/Protective-Eyewear-for-Young-Athletes.pdf>

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Key #5 – Interprofessional Collaboration

- Sports Vision Team may include, but not limited to:
 - Athletic Trainer
 - Coach
 - Team doctor
 - Physical Therapist
 - Massage Therapist
 - Orthopedic surgeon
 - Equipment Manager
 - And more



Key #5 – Interprofessional Collaboration

- Need to make contact with teams
 - Who you know
 - Cold calls are tough
 - Build up a reputation
 - Local club, high school, etc



Key #5 – Interprofessional Collaboration

- Expectations from the team
 - To be available
 - Communicate with the players and athletic trainers (coach)
 - Integration in current practice



Key #5 – Interprofessional Collaboration

- Possible Concussion rehab

Concussion²⁸

- Definition:
 - Complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces.

Concussion

- Visual symptoms:
 - Blurred Vision
 - Photopsia
 - Diplopia
 - Photophobia

Concussion²⁸

Symptoms include...

- Amnesia
- Headache
- Nausea
- Vomiting
- Feeling mentally foggy
- Balance difficulty
- Slowed reaction time
- Concentration difficulty
- Changes in emotions or behavior

Concussion Laws

- Oregon (Max's Law - OAR 581-022-0421)
 - All coaches must receive annual training in recognizing the symptoms of concussion.
 - Students suspected of having a concussion must be removed from play.
 - Students suspected of sustaining a concussion must be evaluated by a properly trained medical professional.
 - A student may return to play when all symptoms have resolved, at least one day has elapsed since the injury, and a medical release has been obtained.

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<http://www.oregon.gov/OSD/OSD%20-%20Sports/OSD%20-%20Sports%20-%20Concussion%20-%20FAQ%20-%202014.pdf>



Concussion Laws

- To find out more from each state, visit:
- <http://usafootball.com/news/featured-articles/see-where-your-state-stands-concussion-law>

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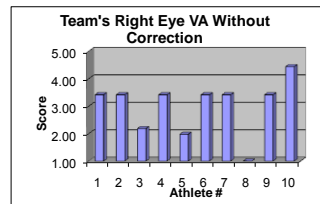
Key #5 – Interprofessional Collaboration

- Set up of care...
 - Screenings
 - Personal Evaluations
 - Reporting
 - Training

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Report Example



Thoughts...

- You can do Sports Vision anywhere
- Use these 5 keys and that will help get you started
 - Focus on the fundamentals and expand from there
- Reach out to our colleagues

Any Questions?

- Thank you
- Fraser C. Horn, O.D., F.A.A.O.
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Thank you

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UPCOMING EVENTS

NW Optometric Residents Conference

June 10 & 11, 2016
Pacific University,
Jefferson Hall
10 hours, \$100



2016 VICTORIA CONFERENCE

July 21 – 24, 2016
Delta Ocean Pointe, Victoria, BC
20 hours of education \$450 - \$550
Kathleen Elliott, Jeff Urness, Amber Giannoni,
John McGreal



Homecoming CE – Saturday, October 15, 2016, Pacific University Jefferson Hall
6 hours of CE, \$100

Glaucoma Symposium – Saturday, January 7, 2017 (tentative)
Woodinville, Washington, 6 hours of CE



2017 ISLAND EYES CONFERENCE

January 22 – 28, 2017

Kauai Marriott Resort

Up to 29 hours of education

Pat Caroline, Bradley Coffey, David Kading, Nate Lighthizer,
Danica Marrelli, Lorne Yudcovitch and Robert Reed

For more conference information contact: JEANNE@pacificu.edu

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