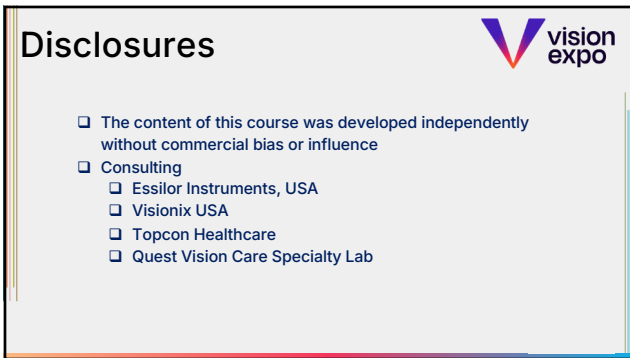


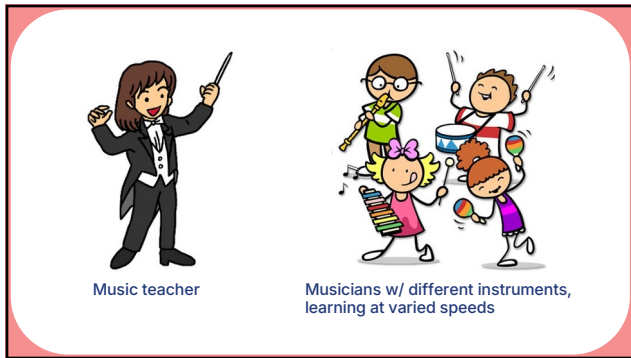
1



2



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4

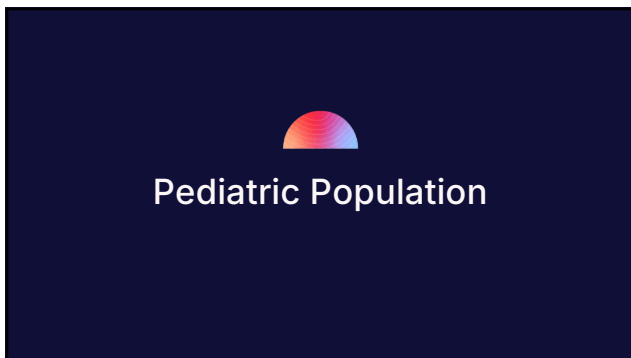
Learning Journey Objectives

- Pediatric population
- Eyewear market share
- Visual conditions
- Visual development
- Educating parents and children
- Treatment options
 - Frames
 - Lenses
 - Patient Case Examples
- Marketing and displaying kids eyewear

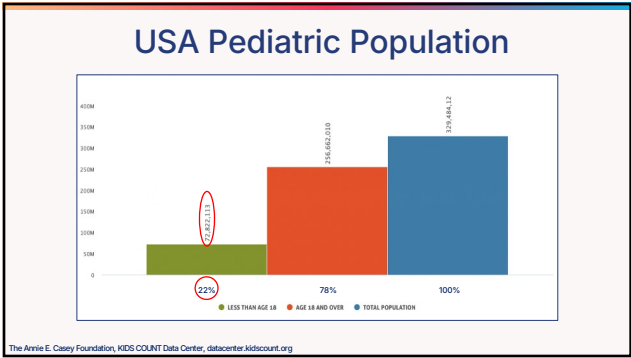
A photograph of a white notepad with the text "Learning Goals and Objectives" written on it. To the right of the notepad is a black cup filled with several colored pencils.

Please use this presentation for staff training and review

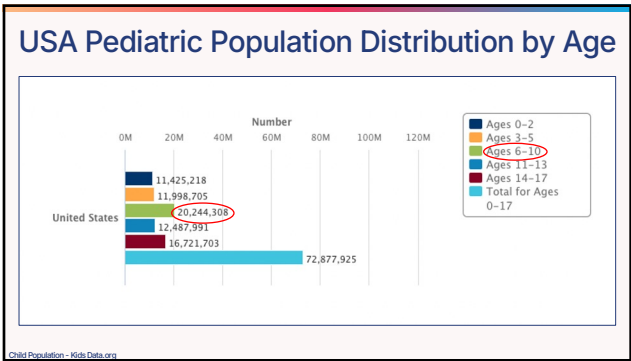
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6



7



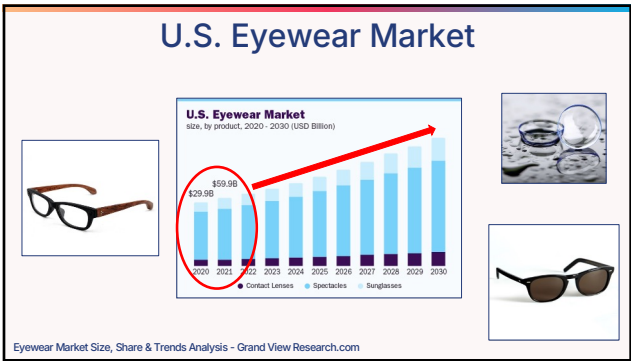
8



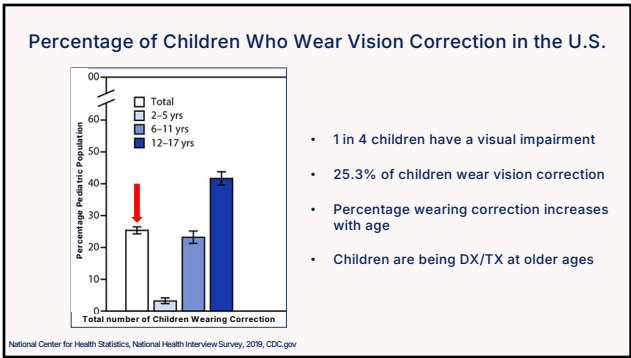
9



10



11



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Pediatric Eyewear Market Share



- ✓ ¼ of our children need vision correction
- ✓ 2021 - \$7.5 Billion spent on pediatric eyewear
- ✓ How can you tap this market?

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Visual Conditions



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What are the Consequences?



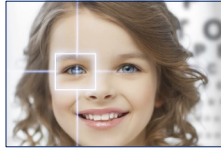
- ☐ Poor school performance
- ☐ Low self esteem
- ☐ Emotional / antisocial behavior issues
- ☐ Poor literacy
- ☐ Increased risk of Incarceration

Children's Vision Care in the 21st Century & Its Impact on Education, Literacy, Social Issues, & the Workplace

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Most Common Visual Impairments

- **Refractive Errors**
 - Myopia
 - Hyperopia
 - Astigmatism
- **Amblyopia (Lazy eye)**
- **Strabismus (Cross eyed)**
- **Binocular Vision Dysfunction (BVD)**
 - Convergence Issues
 - Divergence Issues
- **Accommodation Disorders**
 - Insufficiency
 - Excess
 - Spasm

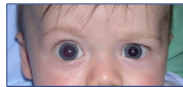


16

Childhood Eye Diseases



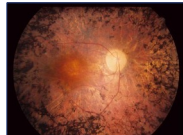
Congenital /Pediatric Cataract



Congenital/Pediatric Glaucoma



Retinoblastoma



Retinitis Pigmentosa

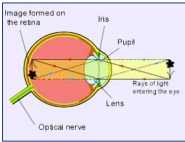
17

Visual Development

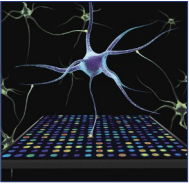


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Visual Processing = Learning



Rapid visual development occurs w/in months



First 3 years
700 neural connections/second

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What do infants see?

Black, white, and 50 shades of gray
Working distance = 25 cm





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What's Normal? Birth -24 months

Vergence: Accurate at 3 months

Accommodation: Developed at 3-4 months

Stereopsis: Developed at 3-4 months

Color Vision: Developed at 3-4 months







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Normal Range of Refractive Error

Hyperopia	
AGE	Normal
6 months	0 - 3.00D
9 months	0 - 2.25D
12 months	0 - 2.00D
18 mos	0 - 1.75D
24 mos	0 - 1.50D
30 mos	0 - 1.25D
36 mos	0 - 1.00D
48 mos	0 - 0.75D

Astigmatism	
AGE	Normal
5mos - 3 Years	0 - 1.75D
3Year - 5 Year	0 - 1.25D

Anisometropia	
AGE	Normal
5mos - 5 Years	0 - 0.75D

Myopia	
AGE	Normal
5mos - 5 Years	<u>No myopia</u>

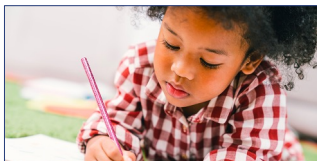
22

Preschool Children 2-5 Yrs

Fine tuning visual motor skills
Continue to develop new skills

Examples

- Stacking building blocks
- Playing with balls
- Drawing and coloring



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Amblyopia

- Preventable
- 2% prevalence in US
- 30% uncorrected > +4.00D = Esotropia



Potential Amblyogenic Refractive Errors



Isometropia	In Diopters
Astigmatism	> 2.50 D
Hyperopia	> 5.00 D
Myopia	> 8.00 D
Anisometropia	
Astigmatism	> 1.50 D
Hyperopia	> 1.00 D
Myopia	> 3.00 D


Amblyopia (lazy eye) = condition in which the best corrected visual acuity is less than 20/20 in the absence of any obvious structural anomalies or ocular disease.

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Amblyopia Treatments

- Spectacles
- Contact Lenses
- Patching
- Pharmaceuticals
- Vision Therapy




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School Age Children 6-17 Yrs


- Reading
- Writing
- Computers
- Sports

Necessary Visual Skills

- Good visual acuity at distance and near
- Focusing ability
- Binocular vision/Eye tracking
- Eye-hand coordination
- Visual perception




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Educating Parents

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When should children get an eye exam?

DOCTORS OF OPTOMETRY RECOMMEND
COMPREHENSIVE EYE EXAMS
FOR **CHILDREN OF ALL AGES**

 INFANTS First exam at 6 - 9 months	 TODDLERS + PRESCHOOLERS At least one exam between 2 to 5	 SCHOOL-AGE CHILDREN An exam every year
--	--	--

National Poll on Children's Health, CS Mott Children's Hospital, University of Michigan

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With regard to eye exams, children are **NOT** little adults



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Pediatric Eye Exam Tools



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InfantSee Program

- 150,000+**
InfantSEE assessments reported since inception of the program in 2005.
- 13,700+**
Infants identified with cause for concern since inception of the program.
- 18,000+**
Eye and vision conditions identified since inception of the program.

<https://www.infantsee.org>

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Vision screenings \neq Eye Exams

An eye examination is essential for back-to-school success!

A vision screening is not a comprehensive eye exam

- 75% Up to 75% of school vision screenings miss vision problems.
- 61% 61% of children found to have eye problems through screenings never visit the doctor.
- 15% Fewer than 15% of preschool children receive an eye exam by a professional.
- 4% School vision screenings give less than 4% comprehensive eye exam.

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RESOURCES

InfantSee

Affordable Care Act (ACA)


Managed Vision Care (MVC) programs

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Pediatric Visual Demands



Near work



Sports



Computers



Digital devices

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Visual Skills

Skills needed for academic and athletic success

- Visual Acuity
- Accommodation
- Eye Teaming and Tracking
- Eye Hand Coordination
- Visual Perception

Eye teaming
problems
look like
seeing double.

Memory
is difficult
seeing clearly
at all distances

Eye tracking
results in
difficulty following
a moving object or
lines of printed text.






**Accommodative
dysfunction**
is difficulty
shifting focus
from near to far.

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What to Look For

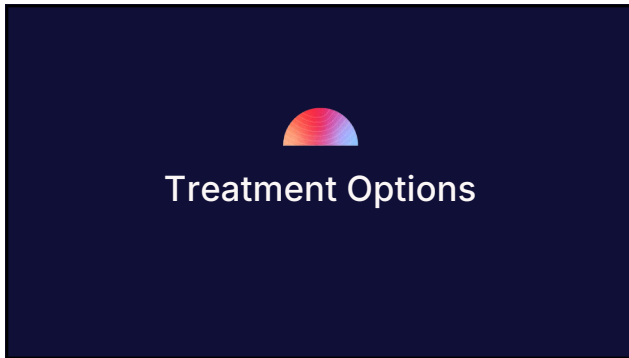
Signs and symptoms of a potential vision problem

- ✓ Complaints of discomfort and fatigue
- ✓ Frequent eye rubbing or blinking
- ✓ Short attention span
- ✓ Avoiding reading and other close activities
- ✓ Frequent headaches
- ✓ Covering one eye
- ✓ Tilting the head to one side
- ✓ Holding reading materials close to the face
- ✓ An eye turning in or out
- ✓ Seeing double
- ✓ Losing place when reading
- ✓ Difficulty remembering what he or she read
- ✓ Difficulty with motor skills

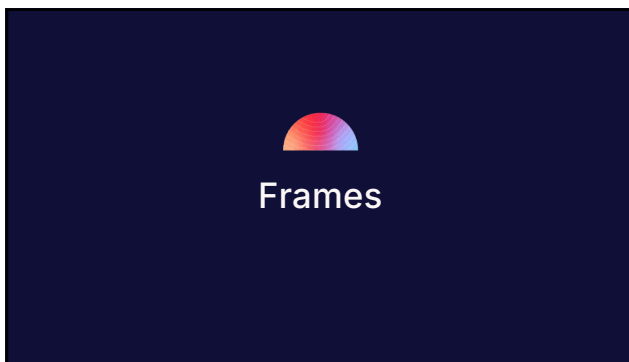






Complete list: American Optometric Association: Eye Health for Life

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Visual Solutions




What do parents want?

1. Durability
2. Warranty
3. Cost






What do kids want?

1. Fashion trends
2. Variety of colors
3. Familiar Brands

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Frames: Zero to 5 Years Old



- Safe
- Proper fit
- Durable

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Frames: 6 to 9 Years Old



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Frames: 10 Years Old and Up



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Proper Frame Fit

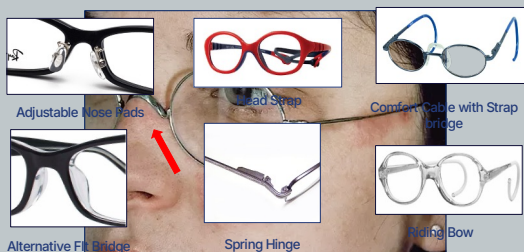


Select a frame with the proper fit to avoid excess adjustments on dispense and avoid the need to re-select a different frame after the lenses have been made.

- Proper frame width
- Eyes centered
- Well fit bridge design
- Appropriate temple length and style

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Frame Anatomy



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Sports Related Eye Injuries

Sport	Total Injuries	0-14 years old	15+ years old
* Basketball	4,597	985	3,632
* Water/Pool activities	4,565	2,637	2,198
* Guns: air, gas, spring, BB	3,612	1,632	1,980
Baseball/Softball	2,109	1,121	988
Football	959	483	476
Bicycling	2,495	668	1,827
Soccer	1,618	404	1,214

Sports injuries by age 2020, Prevent Blindness.org * = Top 3 sports injuries

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Sports Eyewear



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The Right Protection

American Society for Testing and Materials (ASTM)
American National Standards Institute (ANSI)

ASTM F803

- Baseball/Softball
- Basketball
- Field Hockey
- Lacrosse
- Racquet sports
- Soccer



ASTM F513: Face Mask on Helmet

- Ice Hockey
- Street Hockey
- Swim Goggles
- Water Polo



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Resources



REC SPECS



HILCO vision



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Lenses

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Lens Material




Safety First

Lens Material	Index	Abbe	Specific Gravity	Impact Resistance	UV Protection
Glass	1.523	59	2.54	poor	No
CR-39	1.498	58	1.32	good(3mm)	No
Trivex	1.530	46	1.11	pretty good(2mm)	Yes
Polycarbonate	1.586	30	1.20	excellent(2mm)	Yes


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Lens Treatments



- Reduces glare
- Allows others to see eyes and reactions
- Extended warranty

No ARC vs. ARC






- Coating vs Filter
- Clear vs slight yellow vs bluish purple reflection
- Prescribe?

Blue Blockers

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Photochromatic Lenses




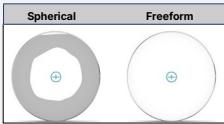
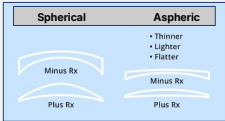
Performance study:

- n= 50 children ages 10-15 y.o.
- Photochromatic better for outdoor activities
- Clear = Photochromic indoor activities
- 88% chose to continue to wear photochromic

Evaluation of the performance of photochromic spectacle lenses in children and adolescents aged 10 to 15 years: Clin Exp Optom

52

Single Vision Lens Designs



- Spherical low Rx
- Aspheric +2.00/-4.00
 - 35-45% thinner, lighter, flatter
 - More beneficial for plus lenses
 - Some benefits for minus lenses

Freeform (Digital) Rx: Sphere 4.00, Cyl 2.00

- Point-by-point optimization
- Larger field of view
- Low significant off axis aberration
- Up to 36% flatter, 16% thinner
- Dual surface better for high plus lenses
 - ex. Hoya ID SV

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Single Vision Lenses


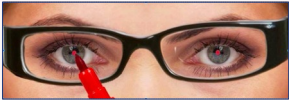
Martin's Rule of Tilt

- Lower OC (optical center) 1mm for every 2° of Panto tilt
- Frame angle default = 8° angle

Traditional SV lenses: OC placement = 180 line

When to specify VFHs

- Freeform / Digital
- Anisometropia



Vertical Fitting Height = pupil center for digital/free form


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Accommodative and BV Disorders


Condition	Treatment
Insufficiency	(+) Lenses @ Near
Infacility	VT (+) Lenses @ Near
Spasm	VT (+) Lenses @ Near
III-Sustained	(+) Lenses @ Near
Exophoria	Prism, VT
Esophoria	(+) Lenses, Prism
Gross Convergence Insufficiency	VT
Convergence Excess	(+) Lenses, Prism
Vertical Phoria	Prism



VT = Vision Therapy

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Lens Designs for Rxing Near Plus



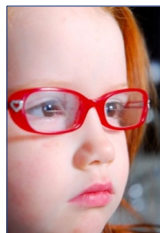
Lenses	Benefits	Limitations
Single Vision Near	Wide Field of View	Distance Blur
Bifocal	Wide Field of View	Cosmesis Image Jump
PAL (Short Corridor)	Cosmesis	Small Reading Area Narrow Corridor Cost
SV Distance with Near Power Boost	Wide Field of View Cosmesis Lower Cost	(Practically None)

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Segmented/Lined Multifocals



Proper frame fit

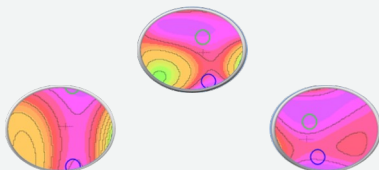


VFH:
Preschool=Fit at bottom of pupil
School Age=2 mm above lower lid

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Variable Power Lens Designs

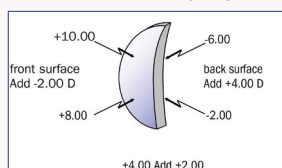
- PAL Surfacing
 - Dual vs All Back Surface
- Progressive
 - Short Corridor
 - Fixed Corridor
- Powerboost/Anti-fatigue



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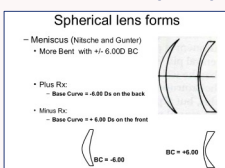
PAL Design

Dual Surface (DS) vs All Back Surface (ABS)



Dual Surface

- Aspheric front
- Better cosmesis in High Plus



All Back Surface

- Spherical front
- Poor cosmesis in High Plus

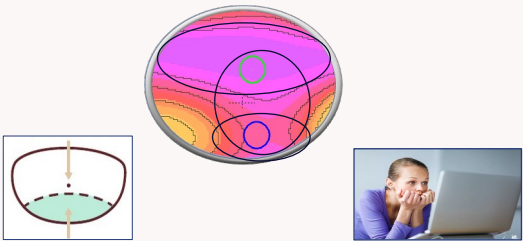
60

Progressive Lenses

Hoya	Zeiss	Shamir
iD LifeStyle3 Urban, Indoor, Outdoor 11,12,13,14,VL	SmartLife Individual Balanced, Intermediate, Near Short 14 Medium 16 Long 18	Autograph Intelligence 11,13,15,18,V
Dual Surfaced Good for High Plus Rx	All Back Surface	All Back Surface
Array 2 BKS 11,13,15,17,VL		
All Back Surface		

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Powerboost/Anti-fatigue



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Powerboost Lenses/Anti-fatigue

Power Boost Lenses		Boost at the Bottom
Zeiss Digital Lens	Digital 500	+0.50
	Digital 750	+0.75
	Digital 1000	+1.00
	Digital 1250	+1.25
Eyezen	Eyezen +1	+0.40
	Eyezen +2	+0.60
	Eyezen +3	+0.85
	Eyezen +4	+1.10
Hoya Sync III	Hoya Sync 5	+0.57
	Hoya Sync 9	+0.95
	Hoya Sync 13	+1.32
	Hoya Sync 20	+1.89
Unity Relieve Lens	Relieve 50	+0.50
	Relieve 70	+0.70


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Patient Case Examples

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Powerboost for Accommodative Esophoria



Annie: 11yo
CC: Ped MD referral for H/As, onset @ beginning of school year

Dry/Wet Ret. and Refraction:
Dist. Rx: +1.00 DS OU ADD +1.00


Dist. CT : ortho Near CT: 5 Esophoria
AC/A = 8/1

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Powerboost Lenses/Anti-fatigue

Power Boost Lenses		Boost at the Bottom
Zeiss Digital Lens	Digital 500	+0.50
	Digital 750	+0.75
	Digital 1000	+1.00
	Digital 1250	+1.25
Eyezen	Eyezen +1	+0.40
	Eyezen +2	+0.60
	Eyezen +3	+0.85
	Eyezen +4	+1.10
Hoya Sync III	Hoya Sync 5	+0.57
	Hoya Sync 9	+0.95
	Hoya Sync 13	+1.32
	Hoya Sync 20	+1.89
Unity Relieve Lens	Relieve 50	+0.50
	Relieve 70	+0.70

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Dr. Brown Eyes 123 Sunshine St. Amazing, CA 98765					
NAME <u>Annie</u>		DATE _____			
ADDRESS _____		DATE _____			
D.V.	S.PHERICAL	CYLINDRICAL	AXIS	PRISM	BASE
	O.D. +1.00	DS			
N.V.	O.S. +1.00	DS			
	O.S. 				
Remarks <u>Zeiss Digital 1000</u>					
DR. _____					

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Powerboost for Accommodative Insufficiency



Sophie: 16yo High School Student
CC: Difficulty focusing, HAs

Dry/Wet Ret. and Refraction:
Dist. Rx: OD -0.75 -0.50 x 010
OS -1.00 -0.50 x 170
ADD +0.75


Accommodative Insufficiency
Dist. CT: ortho Near CT: 4 Exophoria
AC/A = 4/1

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Multifocals: Powerboost Lenses/Anti-fatigue

Power Boost Lenses		Boost at the Bottom
Zeiss Digital Lens	Digital 500	+0.50
	Digital 750	+0.75
	Digital 1000	+1.00
	Digital 1250	+1.25
Essilor Eyezen	Eyezen +1	+0.40
	Eyezen +2	+0.60
	Eyezen +3	+0.85
	Eyezen +4	+1.10
Hoya Sync	Hoya Sync 5	+0.57
	Hoya Sync 9	+0.95
	Hoya Sync 13	+1.32
Unity Relieve	Relieve 50	+0.50
	Relieve 70	+0.70

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<h1>CASE 2</h1>	<p>Dr. Brown Eyes 123 Sunshine St. Amazing, CA 98765</p>	
	<p>NAME <u>Sophie</u></p> <p>ADDRESS _____ DATE _____</p>	

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[illegible]

71

[illegible]



Appeal to Kids



- Toys
- Books
- Treasure Chest

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Displaying Frames

- Display at a lower level
- Include Sports and Sun eyewear
- Promote second pair sales
 - General Wear
 - Sports
 - Sun

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Communication is Key










- Speak directly to the child
- Explain the Rx to parent and child
- Consider bundling or free lenses with 2nd pair
- Discuss Warranty

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Dispensing is the Key to Success


- ✓ Fun / exciting, positive mood, show them off
- ✓ Explain care and handling
- ✓ Explain purpose / use
- ✓ Goodie bag, hard case, cleaning cloth, lens spray
- ✓ Stickers, treasures
- ✓ Use two hands on and off.
- ✓ babies - put on before waking up

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Key Takeaways

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Take Home Point A

Untreated vision problems lead to

- Poor school performance
- Low self-esteem, emotion and antisocial behavior
- Lower literacy, increased risk of Incarceration
- Better vision care = increased literacy, productivity

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Take Home Point B



Healthy Habits (start young for life long benefits)

- Balanced diet
- Outdoor time
- UV protection/ Safety eyewear
- Monitor screen time/ 20-20-20 Rule

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Point C: Everyone WINS!



Financial opportunities



Early detection/treatment =
Normal development



Everyone wins when we take care of our kids

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On behalf of Vision Expo, I sincerely thank you for being here this year.



Vision Expo Has Gone Green!

We have eliminated all paper session evaluation forms. **Please be sure to complete your electronic session evaluations online** when you login to request your CE Letter for each course you attended! Your feedback is important to us as our Education Planning Committee considers content and speakers for future meetings to provide you with the best education possible.



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Associate Clinical Professor
mhoff@berkeley.edu
mhoff@sightlinecc.com

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