



**STATE BOARD OF OPTOMETRY**  
 2450 DEL PASO ROAD, SUITE 105, SACRAMENTO, CA 95834  
 P (916) 575-7170 F (916) 575-7292 www.optometry .ca.gov



Continuing Education Course  
 Approval Checklist

Title:

Provider Name:

- Completed Application
  - Open to all Optometrists?  Yes  No
  - Maintain Record Agreement?  Yes  No
- Correct Application Fee
- Detailed Course Summary
- Detailed Course Outline
- PowerPoint and/or other Presentation Materials
- Advertising (optional)
- CV for EACH Course Instructor
- License Verification for Each Course Instructor
  - Disciplinary History?  Yes  No





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### CONTINUING EDUCATION COURSE APPROVAL APPLICATION

**\$50 Mandatory Fee**

**FEES PAID**

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule, a detailed course outline and presentation materials (e.g., PowerPoint presentation). Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

Course Title Anterior Segment Problems in the Pediatric P <sub>1</sub>	Course Presentation Date 02/05/2017
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#### Course Provider Contact Information

Provider Name Premilla Banwait	(First) (Last) (Middle)
Provider Mailing Address Street 130 Norwood Ct. City Kensington State CA Zip 94707	Dr. Jane Kuo is the provider Jane.Kuo@ucsf.edu
Provider Email Address premilla.banwait@ucsf.edu	
Will the proposed course be open to all California licensed optometrists?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

#### Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

Instructor Name Premilla Banwait	(First) (Last) (Middle)
License Number OPT 13908 TLG	License Type Optometrist
Phone Number (858) 336-6544	Email Address premilla.banwait@ucsf.edu

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider

Date 01/05/2017



Title: Anterior Segment Problems in the Pediatric Patient

Presenter: Premilla Banwait, FAAO OD

Summary:

Evaluating and managing the pediatric patient for anterior segment problems can be challenging. This course will review how to perform an anterior segment history and examination for specific problems ranging from lid disease to uveitis. We will discuss what can be managed in office along with current treatment options. The ability to effectively manage and treat the younger population will assist in preventing long-term vision and ocular health disorders.

**Outline:**

Anterior Segment Problems in the Pediatric Patient:  
UCSF Optometry: A day of CE  
February 5, 2017

**Objectives:**

- I. How to perform an anterior segment history and examination for the pediatric patient
- II. Determining what anterior segment signs may need to be referred and what the primary optometric provider can manage in office
- III. Management and treatment of anterior segment problems in the pediatric patient
  - A. The Pediatric Patient
    1. History
    2. Anterior Segment Examination
  - B. Anterior Segment Problems
    1. Lids
      - a. Chalazion
        - i. Symptoms/Signs
        - ii. Etiology
        - iii. Management –surgery
      - b. Hemangioma
        - i. Symptoms/Signs
        - ii. Etiology
        - iii. Management
          1. Laser treatment
          2. Propanolol
      - c. Ptosis
        - i. Symptoms/Signs
        - ii. Etiology
        - iii. Management
          1. Surgery
      - d. Dermoid
        - i. Symptoms/Signs
        - ii. Etiology
        - iii. Management
          1. Surgery
    2. Conjunctiva
      - a. Staphylococcal Blepharoconjunctivitis
        - i. Symptoms/Signs
        - ii. Etiology
        - iii. Management
      - b. Allergic/Vernal conjunctivitis

- i. Symptoms/Signs
- ii. Etiology
- iii. Management

### 3. Cornea

- a. Glaucoma
  - i. Symptoms/Signs
- b. Foreign body
  - i. Symptoms/Signs
  - ii. Etiology
  - iii. Management
- c. Abrasions
  - ii. Etiology
  - iii. Management
- d. Herpes Simplex
  - i. Symptoms/Signs
  - ii. Etiology
  - iii. Management

### 4. Lens

- a. Congenital cataracts
  - i. Symptoms/Signs
  - ii. Etiology
  - iii. Management
- b. Aphakia
  - i. Intraocular lenses vs. Contact lenses
- c. Contact Lenses
  - i. Fitting infants and young children

### 5. Iris

- a. Uveitis (Iritis)
  - i. Symptoms/Signs
  - ii. Etiology
  - iii. Management
    - 1. Referral to specialists
- b. Persistent Pupillary Membrane
  - i. Symptoms/Signs
  - ii. Etiology
  - iii. Management

### 6. Other

- a. Nasolacrimal duct occlusion
  - i. Symptoms/Signs
  - ii. Etiology
  - iii. Management
- b. Molluscum Contagiosum
  - i. Symptoms/Signs

- ii. Etiology
- iii. Management

c. Ruptured globe/laceration

- i. Symptoms/Signs
- ii. Etiology
- iii. Management

7. Additional Management Considerations

- 1. Amblyogenic Factors
- 2. Medications
  - a. Steroids
  - b. Oral meds
- 3. Referrals

# Anterior Segment Concerns in the Pediatric Patient

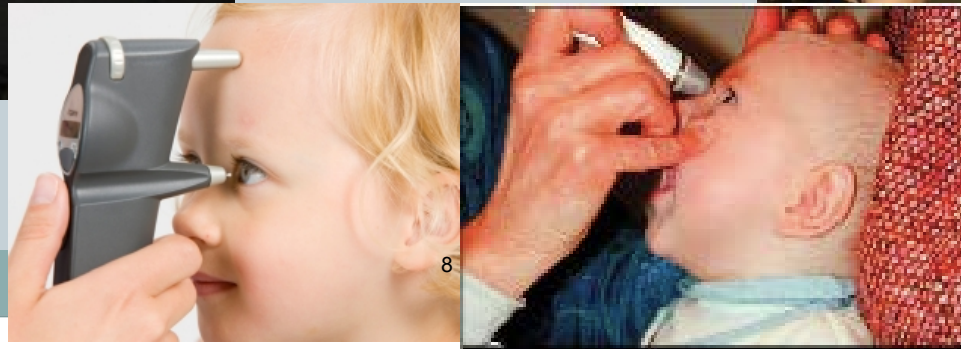
**PREMILLA BANWAIT O.D., F.A.A.O**  
**UCSF Benioff Children's Hospital**  
**OPHTHALMOLOGY DEPARTMENT**

# Objectives

- 1. How to perform an anterior segment history and examination for the pediatric patient
- 2. Determining what anterior segment signs may need to be referred and what the primary optometric provider can manage in office
- 3. Management and treatment of anterior segment problems in the pediatric patient



# Techniques in evaluating the pediatric patient



# Diagnostic EyeDrops

## **Neonates ( 1 day- 24months):**

Cyclomydril - cyclopentolate hydrochloride 0.2%, phenylephrine hydrochloride 1%

- 1 drop per eye for light irides
- 2 drops per eye for darker irides



## **Young Children (2-10 years):**

Combination of 1%Tropicamide, 2.5%Phenylephrine, 1%Cyclopentalate and 0.5% Proparacaine

## **Older Children (11 years and older):**

Combination of 1%Tropicamide, 2.5%Phenylephrine and 0.5% Proparacaine

**LIDS**

# Chalazion

- **Signs/Symptoms**

- Bump on inner or outer lid
- Pain in hordeolum

- **Etiology**

- Inflammation of Glands of Zeiss = superficial chalazia
- Inflammation of Meibomian Glands = deep chalazia
  - ✦ Staph blepharitis
  - ✦ Posterior lid margin disease

- **Treatment/Management**

- Conservative treatment/lid hygiene = 30-40 % success within 3 mos
- Intralesional triamcinolone acetonide (TA) = 80-90% success
- Incision and Cutterage (I&C) = 70-80% success
- Oral Antibiotics





# Chalazion

- **Treatment/Management**

- Conservative treatment = 30-40 % success within 3 mos

- Topical ointments

- ✦ TobraDex – age 2+

- ✦ Maxitrol – age 2+

- ✦ AzaSite



- Oral Antibiotics

- Incision and Cutterage (I&C) = 70-80% success

- ✦ Length of time

- ✦ Size

- ✦ Previously treated?

- Intralesional triamcinolone acetonide (TA) = 80-90% success

# Eyelid/Orbit Hemangioma

- **Signs/Symptoms**

- red or purple lesion
  - ✦ >50% of lesions evident by 1-2 months
  - ✦ 90-100% of lesions evident by 6-8 months

- **Etiology**

- Benign vascular tumor occurring in infants
  - ✦ Due to abnormal growth of vascular endothelial cells

- **Treatment/Management**

- 40-60% completely involute by age 4, 80% by age 8
- Amblyopia - is seen in approximately 50% of patients with eyelid hemangioma – prompt treatment needed!
  - ✦ Intralesional steroid injection
  - ✦ Topical Steroid - propanolol
  - ✦ Oral steroid
  - ✦ Careful surgical excision
  - ✦ Laser



# Ptosis

- **Signs/Symptoms**

- Droopy lid since birth that may be visually significant
- Unilateral or bilateral

- **Etiology**

- Congenital
- 3<sup>rd</sup> nerve
- Congenital Horner's Syndrome

- **Treatment/Management**

- If visually obstructive:
  - ✦ Look for head posture
  - ✦ Check for astigmatic refractive changes
  - ✦ Surgical intervention if amblyogenic - oculoplastics



# Dermoid Cyst

- **Signs/Symptoms**
  - Nontender, firm, partially mobile mass underlying the skin
  - Along fronto-zygomatic suture
- **Etiology**
  - Epithelial cells entrapped in the orbital bony sutures during embryonic development
- **Complications**
  - Contents of cyst are highly inflammatory
  - Orbital cellulitis can occur if ruptures
- **Treatment/Management**
  - Close observation if small
  - Surgically excised if large
    - ✦ 30% to 46% of excised orbital tumors in children



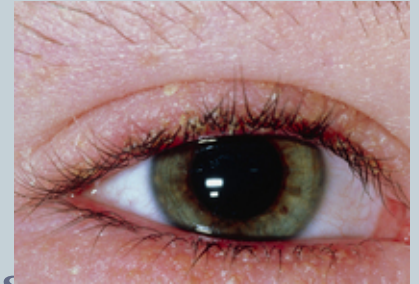


# CONJUNCTIVA

# Staphylococcal Blepharokeratoconjunctivitis

- **Signs/Symptoms**

- Redness/inflammation of conjunctiva and cornea
- Photophobia and decreased VA
- Lid disease - blepharitis
- Inferior vascularization, punctate staining and infiltrates



- **Etiology**

- Hypersensitivity response to toxic protein breakdown products of bacterial disintegration
- Recurrent inflammation

- **Treatment/Management**

- Conservative treatment - Lid scrubs/Warm compresses
- Antibiotic and steroid drops – Erythromycin/Lotemax
- Combo antibiotic/steroid – Tobradex, Maxitrol
- Flaxseed Oil – alternative to long-term anti-inflammatory therapy



# Molluscum Contagiosum Conjunctivitis

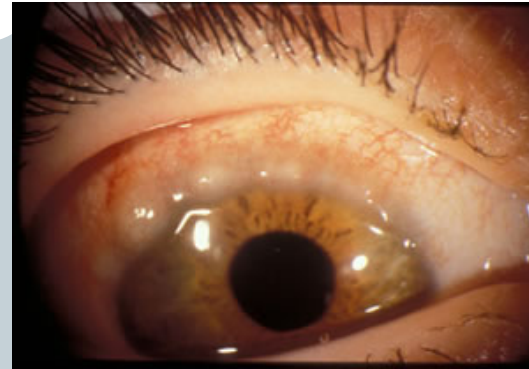
- **Signs/Symptoms**
  - Shiny, dome-shaped umbilicated nodules
  - Chronic follicular conjunctival reaction
- **Etiology**
  - HSV 1 or HSV 2
- **Treatment/Management**
  - Monitor – may resolve
  - Surgical removal of lesions
    - ✦ Especially if causing conjunctivitis
  - No topical treatment needed



# Vernal Conjunctivitis

- **Signs/Symptoms**

- Redness
- Watery clear discharge
- Chemosis of conjunctiva / lids
- Horner trantas dots along limbus
- Itching



- **Etiology**

- Environmental allergens that can affect year-round

- **Treatment/Management**

- Remove allergen
- Topical drops
  - ✦ Steroid - Lotemax
  - ✦ Combination of mast cell stabilizer and antihistamine - Patanol, Zaditor





# CORNEA

# Glaucoma

## Congenital

- **Signs/Symptoms**

- Onset: Birth – 12 months
- Unilateral or Bilateral
- Increased corneal diameter
- “blue” cornea

- **Etiology**

- Adhesions or membrane of angle

- **Treatment/Management**

- Topical Anti-Glaucoma meds - CAIs
- Urgent surgery – trabeculotomy or goniotomy



# Foreign Body

- **Signs/Symptoms**

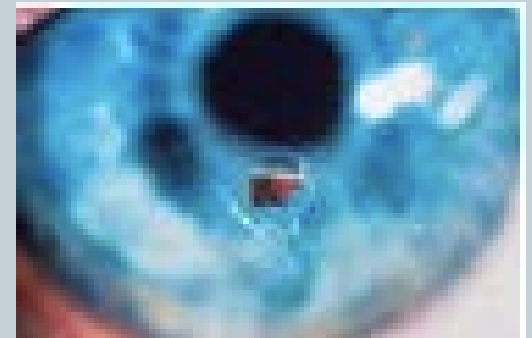
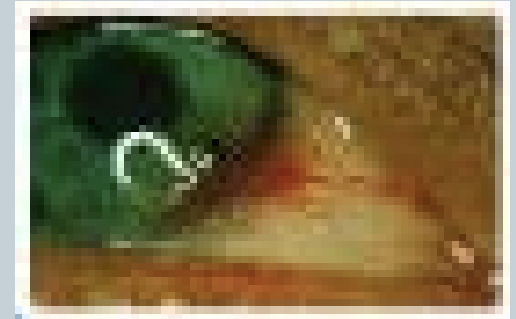
- Red, painful eye
- Photophobia, tearing

- **Etiology**

- +/- history of injury

- **Treatment/Management**

- Removal with or without EUA
- Removal with Q-tip, anesthetic drops
- Perform DFE to rule out retinal complications
- Ensure no intraocular foreign body
- Antibiotic ointment
- Follow-up in 3-5 days



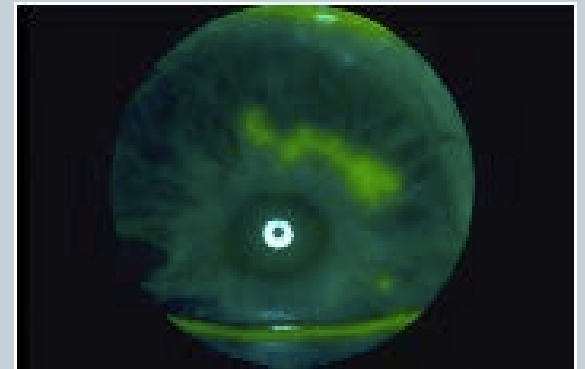
# Corneal Abrasion

- **Symptoms/Signs**
  - Red, painful eye, photophobia
- **Etiology**
  - +/- History of blunt trauma
  - Foreign body
  - Contact Lenses
- **Treatment/Management**
  - May be visible with fluorescein
  - Topical antibiotic ointment
  - Consider cycloplegic
  - Patching is not needed; heals within 1 week



# Herpes Simplex Virus

- **Signs/Symptoms**
  - Can involve lid margins - vesicular lesions
  - Can involve cornea and conjunctiva
  - If conjunctiva red, presume corneal involvement
- **Etiology**
  - Most often HSV 1, rarely HSV 2
- **Treatment/Management**
  - Peds are prone to a more severe inflammatory reaction to HSV than are adults
    - ✦ 50% develop reoccurrence within 1-2 years
  - Never use steroid
  - Treatment with antiviral
    - ✦ Oral Acyclovir – primary therapy
    - ✦ Viroptic – adjunctive therapy
  - Amblyogenic treatment
    - ✦ 40-50% develop residual corneal scar



# Herpes Simplex Keratitis

Reference	No. Children (No. Eyes)	Male-Female Ratio	No. Children With Bilateral Keratitis (%)	No. Eyes With Stromal Keratitis (%)	No. Children Developing Ocular Recurrence (%)
Poirier, 1980	21 (23)	NA	2 (10%)	20 (87%)	7 (33%)
Colin et al, 1982	38 (46)	0.8	8 (21%)	7 (15%)	19 (50%)
Beneish et al, 1987	5 (5)	1.5	0	5 (100%)	4 (80%)
Beigi et al, 1994	28 (31)	1.3	3 (11%)	9 (29%)	16 (57%)
Schwartz et al, 2000	7 (7)	1.3	0	6 (86%)	4 (57%)
Chong et al 2004	23 (29)	1.1	6 (26%)	14 (48%)	11 (48%)
<b>Overall</b>	<b>122 (141)</b>	<b>1.1</b>	<b>19 (16%)</b>	<b>61 (43%)</b>	<b>61 (50%)</b>



# Limbal Dermoid

- **Signs/Symptoms**

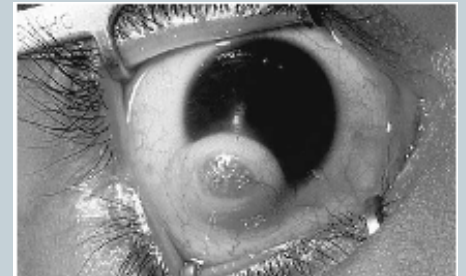
- white or tan nodule
- usually along the inferotemporal quadrant

- **Etiology**

- congenital choristoma of the ocular surface

- **Treatment/Management**

- Rule out Goldenhar's syndrome
- May be surgically excised to improve appearance - astigmatism persists.



# LENS

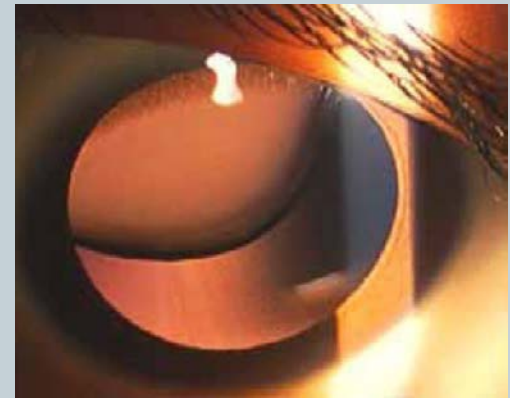
# Congenital Cataracts

- **Signs/Symptoms**
  - Unilateral or bilateral opacification of lens
  - No red reflex seen with retinoscopy or DFE
- **Etiology**
  - Due to birth complications
  - Chromosomal abnormality
- **Treatment/Management**
  - Surgical – urgent within 17 months of life
  - Correction for aphakia
    - ✦ Glasses, contact lenses, IOL (early as 6 mos)
  - Amblyopia treatment



# Ectopia Lentis

- **Signs/Symptoms**
  - High myopia/astigmatism
  - Subluxation of lens -apparent on retinoscopy or DFE
- **Etiology**
  - Genetic condition
    - ✦ Marfan's Syndrome
    - ✦ Homocystinuria
    - ✦ Weill-Marchesani syndrome
    - ✦ Ehlers-Danlos syndrome
  - Trauma
- **Complications**
  - Glaucoma, Uveitis



# Ectopia Lentis

- **Treatment/Management**
  - Refer for systemic work-up if no diagnosis established
  - Check every 3-4 months especially with family history
  - Check pressures
  - Check for changes in refractive error
  - Treat for anisometropic amblyopia
  - Lensectomy performed if complications arise or unclear lens image

# PUPIL/IRIS



# Iris atrophic changes/Pupillary Membranes

- **Signs/Symptoms**
  - Iris atrophy or dislocation
  - May have decreased vision
  - May be progressive
- **Etiology**
  - Congenital
    - ✦ Iris coloboma
    - ✦ Persistent pupillary membrane
    - ✦ Corectopia
  - Secondary to Trauma
- **Treatment/Management**
  - Conservative treatment for amblyopia
  - Monitor for progression
  - Pupilloplasty - case by case basis



# **ANTERIOR CHAMBER**

# Anterior Uveitis

- **Symptoms/Signs**
  - Pain, photophobia, red eye, mildly reduced vision
  - Often symptomatic – especially JRA patients
  - Unilateral
  - Inflammation of conjunctival and episcleral vessels
  - Inflammation of AC - cells
- **Etiology**
  - Trauma
  - Autoimmune - JIA
  - Idiopathic
- **Treatment**
  - Steroids, Oral immunosuppressants,
  - Cycloplegics
  - Have referred to Rheumatology or Pediatrician

# Hyphema

- **Signs/Symptoms**

- Blood in anterior chamber – categorize by percentage of AC filled with blood
- Traumatic iritis response
- Increased intraocular pressure

- **Etiology**

- Blunt trauma causing tearing of iris vessels

- **Complications**

- Rebleeds
  - ✦ Most likely will occur at day 3-5
- Glaucoma
  - Sickle cell patients develop complications at much lower IOP
- Corneal Blood Staining

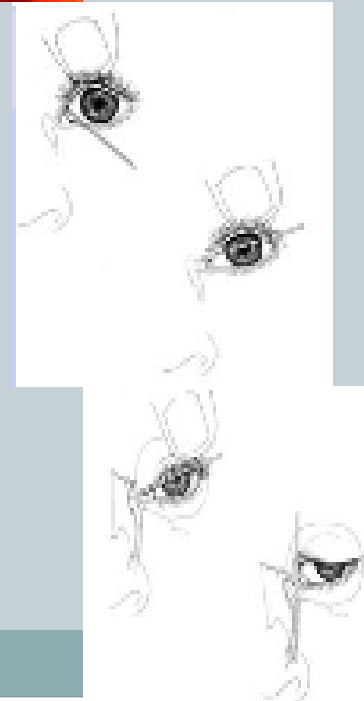


# Hyphema

- **Treatment/Management**
  - Bed rest – to avoid re-bleed
  - Atropine 1% 1gtt qd - keep iris immobile
  - Topical steroids – Pred Forte every 2 hours
  - Monitor IOP
  - Non-resolving may require surgical “wash out” of anterior chamber

# Nasolacrimal Duct Obstruction

- **Signs/Symptoms**
  - Onset at Birth
  - Unilateral or Bilateral
  - Watery eyes
  - Can be mistaken for bacterial conjunctivitis
- **Etiology**
  - Membranous adhesions of Valve of Hasner
  - Anatomical abnormality of nasolacrimal duct
- **Treatment/Management**
  - Spontaneous resolution
  - Massage
  - Refer for surgical probe if present at 1 year of age
  - Balloon Dacryoplasty and Tubes





# Ruptured Globe/Laceration

- **Signs/Symptoms**

- Shut, painful, red eye

- **Etiology**

- + history of blunt force trauma

- **Treatment/Management**

- Immediate ophthalmologic consultation
- DO NOT pry open lids or pressure patch
- Protect with contact shield until ophthalmologic evaluation
- Stress no eating or drinking if transferring

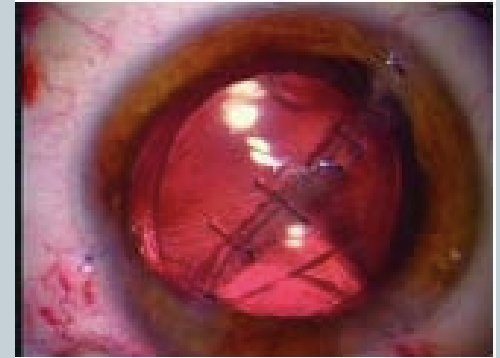


# Ruptured Globe/Laceration

- **Post-surgical treatment**

- Check for significant induced astigmatism

- ✦ Fit with RGP lens
- ✦ Treat amblyopia if exists



- Unilateral aphakia

- ✦ Fit with aphakic lens
- ✦ Treat amblyopia if exists
  - Children between 4 mos and 3 years will develop amblyopia if visual axis is obscured or blurred for more than 2 weeks

# **ADDITIONAL MANAGEMENT CONSIDERATIONS**

# Amblyogenic Factors

- For any residual scar or opacification covering visual axis – you must PATCH!
  - Patch more hours if patient is younger
- Age in years = weeks of follow-up
  - Ex. Follow-up every 4 weeks in a patient who is 4 years old with a corneal scar s/p HSV keratitis

# Pediatric Safe Topical Medications

- **Antibiotics**

- Erythromycin gtt/ung – neonates and up, 6x/day
- Tobramycin (Tobrex) gtt/ung – 2+ mos, q 3hours
- Ciprofloxacin (Ciloxan) ung – 2+ years
- Polytrim (Polymyxin and Trimethoprim) gtt – 2+ mos
- AzaSite (Azithromycin) gtt/ung – 1+ years
- Fluroquinolone gtt – 1 + years

- **Allergy**

- All ophthalmic allergy solutions are safe for 3+ years

- **Antibiotic/Steroid combo**

- TobraDex gtt/ung – 2+ years
- Maxitrol gtt/ung – 2+ years

- **Antivirals**

- Viroptic gtt – 6+ years

# Safe Oral Medications

- **Know appropriate dosing - based on weight**
  - 1kg = 2.2lbs
  - 1 tsp = 5ml
- **Check for allergies!!!**
  - Sulfa, PCN
- **Consult with a local pharmacologist**
- **Antibiotics:**
  - Amoxicillin – 20-40 mg/kg/day q8h - 3+mos (Preseptal Cellulitis)
  - Erythromycin- 30-50 mg/kg/day q6h – neonates +
  - Tetracycline – for 8+ years only
- **Antivirals**
  - Acyclovir - 15–20 mg/kg/day for HSV – 2+ years



# Referrals

- **Manage when possible and follow-up regularly**
  - Always check vision!
- **Refer when unsure of signs in pediatric patients**
- **Be familiar with location of hospitals and urgent care clinics**

# References

- A prospective study of cost, patient satisfaction, and outcome of treatment of chalazion by medical and nursing staff . Br J Ophthalmol 2000;84:782–785
- Castillo BV Pediatric tumors of the eye and orbit. *Pediatr Clin N Am* 50 (2003) 149–172
- Patel AJ. *Journal of American Association for Pediatric Ophthalmology and Strabismus* Volume 8, Issue 3, June 2004, Pages 274-277
- Hug T. Dilation efficacy: is 1% cyclopentolate enough? *Optometry*. 2007 Mar;78(3):119-21.
- Chong EM. Herpes simplex virus keratitis in children. *American Journal of Ophthalmology* Volume 138, Issue 3, September 2004, Pages 474-475
- G.S. Schwartz and E.J. Holland. Oral acyclovir for the management of herpes simplex virus keratitis in children. *Ophthalmology*, **107** (2000), pp. 278–282.
- Wright KW. *Pediatric Ophthalmology and Strabismus*. Section V pgs 279-367. 1995 Mosby
- Coulter RA. Pediatric use of topical ophthalmic drugs. *Optometry*. 2004 Jul;75(7):419-29

## CURRICULUM VITAE

### **Premilla Banwait, O.D., F.A.A.O.**

General and Pediatric Optometrist  
Department of Ophthalmology  
University of California San Francisco  
400 Parnassus Ave  
San Francisco, CA 94131

#### **PREDOCTORAL EDUCATION:**

BS: University of California San Diego, La Jolla, CA (2001-2005)  
Optometry: University of California Berkeley School of Optometry, Berkeley, CA  
(2005-2009)  
Fellowship: American Academy of Optometry, FAAO 2010

#### **RESIDENCY TRAINING:**

Pediatric Optometry Fellowship: Children's Mercy Hospitals & Clinics, Kansas City, MO  
(2009-2010)

#### **MEDICAL SCHOOL APPOINTMENTS:**

2013-present University of California, San Francisco, CA  
2010 – 2013 University of Colorado Denver, Aurora, CO

#### **HOSPITAL STAFF MEMBERSHIPS:**

2013- present Benioff Children's Hospital, San Francisco, CA  
2013-present University of California San Francisco, San Francisco, CA  
2013- present San Francisco General Hospital, San Francisco, CA  
2010 - 2013 University of Colorado Hospital, Aurora, CO  
2010 - 2013 The Children's Hospital, Aurora, CO

#### **PROFESSIONAL/ COMMUNITY SOCIETIES:**

American Academy of Optometry (AAO/SAAO)  
American Optometric Association and Colorado Optometric Association (AOA)

#### **LICENSES:**

California Optometry License # OPT 13908 TLG  
Colorado Optometry License # OPT-2805

#### **ADDITIONAL CLINICAL EXPERIENCE**

Walmart Vision Center, Kansas City, Missouri 07/09 – 07/10

ACMC community clinic rotation, Oakland, California 03/09-05/09

San Francisco State University, San Francisco, California 03/09-05/09

San Francisco Veterans Affairs Hospital rotation, San Francisco, California 1/09-03/09

Castle Eye center rotation, Atwater, California 08/08-10/08

## **PUBLICATIONS:**

1. Quina LA, Pak W, Lanier J, **Banwait P**, Gratwick K, Liu Y, Velasquez T, O'Leary DD, Goulding M, Turner EE, Brn3a- expressing retinal ganglion cells project specifically to thalamocortical and collicular visual pathways. *J Neurosci* 2005 Dec 14;25(50):11595-604.

## **PRESENTATIONS:**

1. "Anti-VEGF Drugs for AMD" Fall I 2007 Primary Care Clinic
2. "Nikon Eyewear: Spring II 2008 Eyewear Presentation
3. "My Eyes are Red and Itchy!", Spring II 2008 Primary Care Clinic
4. "Hemorrhages of the Posterior Pole and Optic Disc" Spring II 2008 Primary Care Clinic
5. "RAPD and Amblyopia" Summer 2008 Binocular Vision Clinic
6. "Uveitis" Summer 2008 Primary Care Clinic
7. "X-linked Juvenile Retinoschisis" Fall 2008 Low Vision Clinic
8. "Lamellar Hole vs. Pseudomacular Hole" Spring 2008 San Francisco VA Medical Center, San Francisco, CA
9. "Contact Lens Care" Spring 2008, San Francisco State University Eye Clinic, San Francisco, CA
10. "When is Surgery Indicated for Strabismus and Motility Disorders", University of Missouri St. Louis Residents Day, October 2009.
11. "Red Eye for the Primary Care Practitioner" May 2011 and September 2011 Boulder Community Hospital. Boulder, CO
12. "Red Eye in the Pediatric Patient" November 2011 Denver Metro Optometric Society – COA, Denver, CO
13. "Pediatric Vision and refraction" –UCSF residents lecture October 2013 and 2014
14. Optometrist lecture series- high schools in Oakland Unified School District 2016

## **ABSTRACTS/POSTERS:**

1. Refractive Surgery and the Pediatric Patient, **Banwait P**, Poster presented at American Academy of Optometry, 2009.
2. Staphylococcus Hypersensitivity Keratitis Associated with Impetigo of the Lid margins", **Banwait P**, SECO 2010 Multimedia Poster Session.
3. Comparison of Corneal Thickness Change in Pediatric Unilateral Aphakes Wearing Hydrogel and Silicone Hydrogel Soft Contact Lenses, **Banwait P**, Poster Presented at American Academy of Optometry, 2010.

## **RESEARCH:**

1. Research Assistant – Retinal nerve research on knockout mice to determine neuron projection dependence on colocalization of genes, Turner Neuroscience Lab, University of California San Diego, La Jolla CA. 09/2003-07/2005.
2. Histologist – Determining neural organization of visual pathways of the feline brain. Freeman Neuroscience Lab, University of California Berkeley School of Optometry, 10/2006-05/2007.
3. Clinical Research – Comparison of Corneal Thickness Change in Pediatric Aphakes Wearing Hydrogel and Silicone Hydrogel Contact Lenses, Children's Mercy Hospital, 11/2009-07/2010.