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*Pacific University College of Optometry*

# EYE ON PACIFIC

As vision subspecialties continue to grow, we can ensure that patients continue to get the care they deserve.

Summer | 2015

## Prescribing Tips for Preschoolers

**JP LOWERY, OD, FAAO** | PEDIATRIC VISION SERVICE CHIEF

The vast majority of prescribing decisions in pediatric vision care revolve around refractive issues: when and how much power to prescribe. From a purely epidemiological standpoint, 15 to 25% of young children can benefit from corrective lenses.

The first challenge for optometrists lies in obtaining accurate refractive measures, particularly with preschoolers. Since we need to rely on purely objective measures with this young population, I find it useful to have as much data as possible. This means both dry and wet retinoscopy and auto-refraction, as well as dynamic retinoscopy for hyperopes. In the spring issue we briefly discussed how the autorefractor is a very useful adjunct measurement for astigmatism, but the spherical component is only valid under cycloplegia.

Assuming we obtain valid measurements, we are still faced with the primary challenge of what to prescribe. There are several factors that play into prescribing decisions for preschoolers. These include the age of the child, our knowledge of the emmetropization process, the magnitude of the refractive error, and the



# Preschool Prescribing Tips (continued)

potential for the refractive error to cause amblyopia or hinder overall perceptual-motor development.

First, let's look at what we have learned about emmetropization and amblyopia in the last 20 years. There have been several large, longitudinal studies evaluating how the infant eye grows and the relationship between refractive error, accommodation, and outcomes in the later preschool years. It is from this wealth of data that the following concepts are derived.



There is a fairly large distribution of refractive errors among neonates, but most are in the hyperopic range. As children grow, the cornea becomes flatter, the lens thins, and the axial length increases such that most children end up as low hyperopes by age 2 years. The balancing act between the refractive elements and axial length of the eye is primarily played out in the first 18 months. After this there is a much slower drift of refractive error through the preschool years (unless early onset myopia occurs). The bottom line is that 90% of the emmetropization process happens in the first 12 to 18 months. Clinically, this means that if you see a child with significant refractive error at age 2 to 3 years, it is likely not going away. However, hyperopia observed at 6 months of age may be significantly reduced by age 12 to 18 months. The same goes for astigmatism and anisometropia. Myopia, however, doesn't follow the same rules. Significant myopia in an infant should always be considered in light of potential pathological factors (ex. retinopathy of prematurity or genetic syndromes) as it is quite rare as an isolated refractive error.

Another important point regarding emmetropization is that the greater the refractive error at 3 months, the less likely that

the eye will emmetropize. A child who has very high hyperopia ( $>6$  D) as a young infant is not likely to emmetropize and may become more hyperopic.

So, when prescribing for infants one needs to take into account both the magnitude of the refractive error and how the infant is responding to proposed prescription. Dynamic retinoscopy (MEM) is a critical finding with young hyperopes. We always want to know exactly how much refractive error is really there, but the final decision to prescribe may be based more on the infant's ability to compensate for the hyperopia, especially in those borderline zones from 3 to 6 diopters of hyperopia.

It is difficult to state any absolute rules or cut-offs for prescribing for hyperopes because there are so many variables to consider when prescribing. For an infant up to one year of age, any amount of hyperopia (cycloplegic) over 4 to 5 diopters should be considered a high risk for leading to amblyopia or strabismus (see Table below for refractive amblyopia criteria). However, it is usually best to evaluate the infant over two visits a few months apart before deciding to prescribe unless there is significant anisometropia in addition to high hyperopia.

# Preschool Prescribing Tips (continued)

## Case Example

We recently saw an infant for an initial exam at 3 months of age whose older brother has very high hyperopia (+9.00 range) and esotropia. Mom brought in the new baby because she was certain she was seeing intermittent esotropia and knew the genetic risk factors at play. We found +7.50 D with minimal astigmatism in each eye (cyclopleged with 1% tropicamide that I prefer to use with young infants). However, prior to cycloplegia, we observed good ocular alignment, no eye movement abnormalities, and a very robust accommodative response using a large colorful target presented next to the retinoscope at 30 cm. Given that the infant was just starting the emmetropization process and was accommodating quite effectively, we decided to wait and monitor in 3 months. At the follow-up visit at 6 months of age, the infant showed +4.50 D in each eye as well as perfect alignment and accommodative responses. His mother reported seeing no esotropia since the last visit. At this point, we felt that there was no need for significant concerns but wanted to see the baby back in another few months to make sure the positive trend continued. Five months later, the 11 month old baby was still showing perfect visual responses, gave positive responses to the LANG stereo test (random dot), and cycloplegic retinoscopy (1% cyclopentolate) revealed +3.00 in each eye. The child was now in the normal range of refractive error for his age.

## Discussion

So how much should we prescribe for the young hyperope? This really depends on the other factors at play in the accommodative convergence relationship, but if the child appears to have a normal AC/A relationship, I generally don't leave any more than 1 diopter of uncorrected hyperopia. We need to keep in

Hyperopia	Astigmatism	Anisometropia	Myopia
> 6 D; less if astigmatism or any anisometropia is present	> 2 D WTR > 1.5 D ATR or OBLIQUE	> 1.5 D hyperopia or astigmatism > 3.5 myopia	> 8 D; depends on other retinal health factors

*Table: Refractive amblyopia is likely with these refractive errors.  
(WTR: with the rule; ATR: against the rule)*

mind that high hyperopia (>6 D) is very amblyogenic. Leaving too much residual hyperopia sets the stage for accommodative esotropia in a child with bilateral amblyopia and poor sensory fusion. Providing a clear retinal image at all distances is the primary goal until the child learns to accommodate accurately and develops better central fusion. If exotropia or high exophoria is present, you can reduce the hyperopic correction to maintain a better vergence posture or strabismus control.

Anisometropia is the most common cause of unilateral amblyopia. In general, anisometropia greater than 1.25 diopters is likely to lead to some level of amblyopia, but as little as 0.50 diopter can decrease stereopsis. Small amounts of anisometropia are commonly seen in the first year of life and will likely go away with emmetropization. However, significant levels of anisometropia (over 2.5 D) are not likely to go away and are much more amblyogenic. The most important prescribing rule for anisometropia is to always prescribe in a balanced manner. This means cutting the plus equally from each eye.

Astigmatism may change quite a bit in the first year of life when the cornea is growing rapidly. However, any amount of astigmatism over 2 diopters is potentially amblyogenic and should be compensated completely. There will be a significant adaptation period, but if you leave a significant amount of astigmatism uncorrected, you are not fully treating the amblyopia. While it may seem appropriate to prescribe less at the first visit with the plan to increase to the full correction after 6 months or a year, the reality is

# Preschool Prescribing Tips (continued)

that we may not see that child in our clinic again for 2-3 years, or never. We also need to keep in mind that the clock is ticking on the critical period of maximal neuroplasticity.

Myopia is usually progressive when it starts in the preschool years. When you see over 2 diopters of myopia in a very young child, it is generally wise to prescribe the full or nearly full amount and monitor closely. There are many issues related to ocular health and potential myopia control that are beyond the scope of this article.

After you prescribe, follow your patients closely. You should code for refractive amblyopia on the initial visit if the refractive error is potentially amblyogenic (see table above) so that you can bill the follow-up exams as medical office visits. Even if glasses are all that is necessary for treatment, you are still managing amblyopia. We continue to code amblyopia until the child shows normal and equal acuities for his/her age.

I am always available for consult. Please don't hesitate to e-mail me if you have questions related to pediatric care: [loweryj@pacificu.edu](mailto:loweryj@pacificu.edu).

## Advances in Contact Lenses

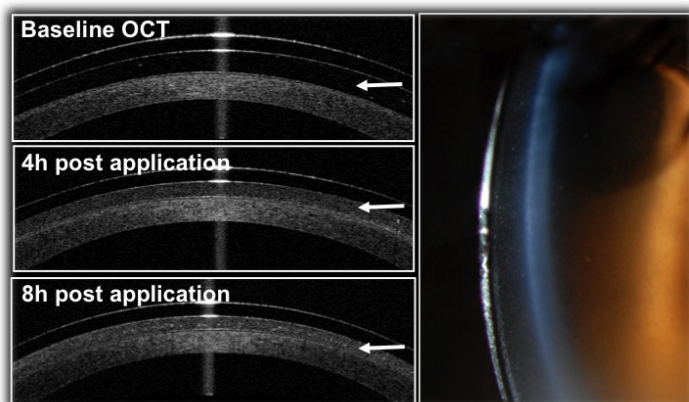
**MATT LAMPA, OD, FAAO** | CONTACT LENS SERVICE CHIEF

Scleral contact lenses have proven to be transformative for those patients with irregular astigmatism and ocular surface disease, as well as other ocular conditions. In recent years we have seen an increase in the number of scleral contact lenses prescribed. With the increasing use of scleral lenses, practitioners and researchers are beginning to understand some of the complications unique to this modality.

One such complication is tear film fogging. Here, fluid is trapped under the scleral lens. The fluid can increase in turbidity within hours of application causing reduced visual acuity.

Our studies at Pacific University indicate the turbid samples taken from scleral lens wearers have a higher concentration of lipid compared to those with clear fluid under the scleral lens. Interestingly, the tears have similar amounts of protein versus those that are clear, which indicates the fogging is related to something other than protein-rich mucin accumulation, as was originally suspected. We continue to research the role of lipids in this condition.

Patients initially manage the fogging through mid-day removal of the lenses and replenishing the



*Tear chamber debris increases with increasing time.*

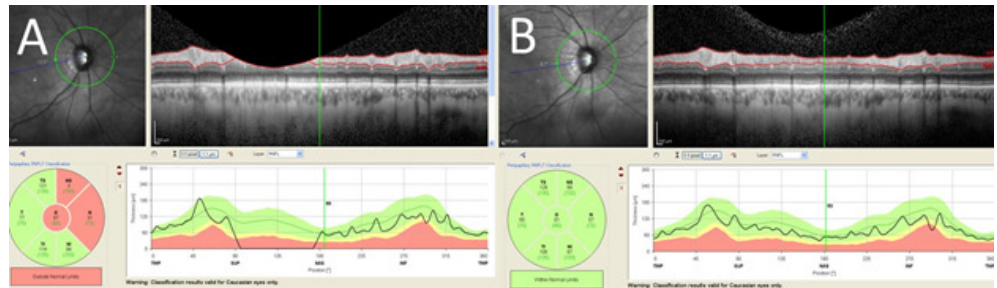
lenses with fresh preservative free saline before re-applying the lenses. The condition seems to reach its height in severity over the first month of wear and decrease with time. However, it is not totally eliminated following adaptation to new lenses.

The condition can be lessened by designing scleral lenses with minimal clearance over the peripheral cornea and limbus or using a more viscous preservative free artificial tear prior to contact lens insertion. Also, patients can irrigate their eyes with preservative free saline prior to application of their lenses.

# Advances in Medical Eye Care

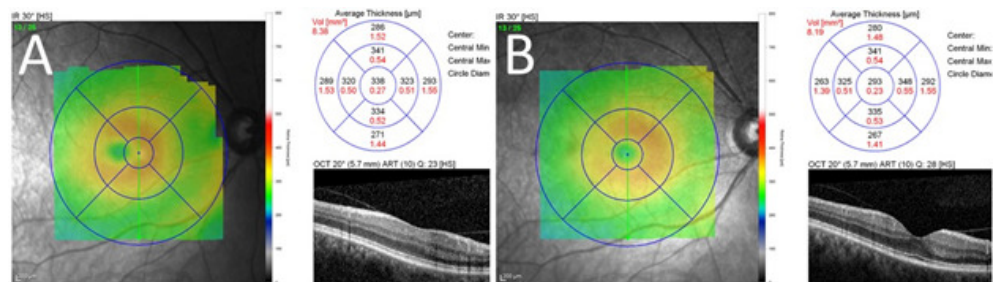
**LORNE YUDCOVITCH, OD, MS, FAAO** | MEDICAL EYE CARE SERVICE CHIEF

Data acquisition: “garbage” or “golden?” Technological advances in optometry have grown enormously over the last several years, providing greater detail into diseases that were previously difficult to diagnose and manage. Our expertise is still necessary, however, to determine if data gathered from this technology is valid.



*Patient 1 shows what appears to be notably thin retinal nerve fiber layer (A) on optical coherence tomography. This was due to shadow artifact rather than true nerve fiber thinning, which is corrected in the second scan (B).*

The examples to the right show how poor quality scans can mimic disease conditions on both retinal nerve fiber and macular thickness OCT scans.



*Patient 2 shows what appears to be a thicker than normal fovea (A) on the macular grid. This was due to eccentric fixation, which is corrected in the second scan (B).*

While the “Robot/Artificial Intelligence Revolution” seems more and more plausible, it’s comforting to know that humans must interpret information and determine if clinical data is “garbage” or

“golden.” We are happy to consult on test data to determine validity, reliability, and/or quality. Please feel free to contact the Medical Eye Care Service at any of our Eye Clinics.

# Advances in Neuro-Ophthalmic Disease

**RICK LONDON, MA, OD** | OCULAR MOTILITY AND NEURO-OPTOMETRY CLINIC

The Ocular Motility and Neuro-Optometry Clinic (OMNO) is located at our downtown Portland facility. It is a referral-only clinic dedicated to eye movement disorders (strabismus, nystagmus, etc.), amblyopia, and ocular manifestations of neurologic disease or trauma. This includes conditions such as thyroid ophthalmopathy, multiple sclerosis, myasthenia gravis, and acquired brain injury. I, Rick London, direct the clinic and see these patients along with our current Binocular Vision and Rehabilitative Optometry resident.

Just a little about myself: I have worked with these

types of conditions for over 25 years and was the recipient of the Advancement of Science Award from the Neuro-Optometric Rehabilitation Association. During my career, I have lectured and published on many neuro-optometry topics, most recently in the Journal of Neuro-ophthalmology.

Our facility offers some technology not readily available in many private offices such as eye movement recordings and Goldmann perimetry. We co-manage appropriate surgical cases with David Wheeler, MD and work closely with our vision therapy clinics for follow-up care.

# Pacific EyeClinics Updates

**CAROLE TIMPONE, OD, FAAO, FNAP** | ASSOCIATE DEAN OF CLINICAL PROGRAMS



*Dr. Michela Kenning  
Director, Hillsboro EyeClinic*

We are delighted to announce Michela Kenning, OD, as our new Director of the Hillsboro EyeClinic. Her appointment follows the departure of Dr. Len Koh, who accepted the position of Assistant Dean of Clinical Affairs at Midwestern University, Arizona College of Optometry.

Dr. Kenning, a Pacific University graduate, completed a residency at the Veterans Administration St. Louis Health Care System in primary care and geriatric disease. She later served as Director of their weekend referral clinic that was developed to increase access to care for veterans with eye health needs.

In addition to two years working in private practice in Vancouver, WA, emphasizing dry eye care and surgical comanagement, she brings experience managing a hospital-based optometry practice where she worked within an interprofessional setting. Dr. Kenning, also passionate about community outreach, is looking forward to serving as an attending in Pacific's Interprofessional Diabetes Clinic in Hillsboro, that provides care for the underserved, primarily Latino, population with diabetes. During her free time she enjoys traveling, hiking, fine arts, theater productions, and spending time with her husband.

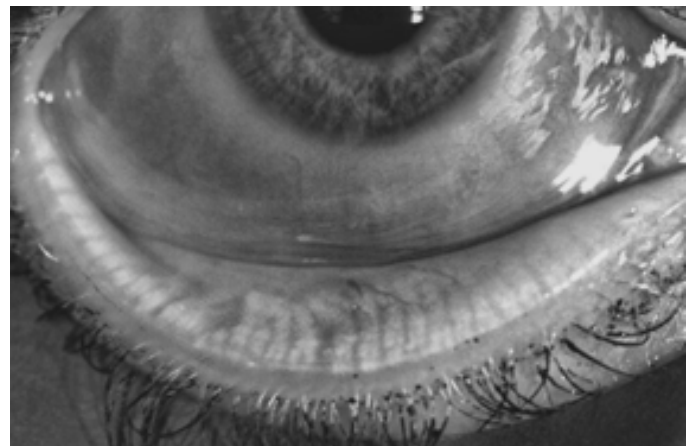
The College is also pleased to announce the opening of its newest specialty clinic, Pacific Dry Eye Solutions, dedicated to the diagnosis and management of dry eye disease.

Located at our EyeClinic, Beaverton, Dr. Tracy Doll serves as the clinic's coordinator and offers advanced ocular surface disease diagnosis and treatment options for your patients.

Diagnostic and treatment services include: TearScience LipiView and LipiFlow for Meibomian Gland Dysfunction, BlephEx for Blepharitis, Prokera Amniotic Membrane, Nutraceutical counseling, blink regimens with smart apps, InflammDry testing for ocular inflammation, Sjo Testing for Sjogrens syndrome, scleral contact lens co-management, and customized home therapy plans.

If your patients are suffering from the irritation, discomfort and blur of ocular dryness, we are here to help. Please contact Pacific Dry Eye Solutions at 503-352-1699 (phone) or 503-352-1690 (fax).

Our clinical faculty are here to help you with patient consultations and referrals. Please let us know how we can best serve your needs!



*Pacific's new Dry Eye Solutions Clinic is now open at our Beaverton clinic.*

## CE Opportunities

### August 2015:

-KAMRA Inlay Certification Dinner for OD's (sponsored by Teplick Vision); del Alma Restaurant, Corvallis, OR; Aug. 27, 5:45-7:45\*

### September 2015:

-Great Western Council of Optometry; Oregon Convention Center, Portland, OR; Sept. 9-13

-Live Lasik Surgery Seminars for Optometric Staff and Opticians; Teplick Vision Center, Portland, OR; Sept. 16, 6:00-8:00\*

-PUCO Tulalip Continuing Education; Tulalip, WA; Sept 20

### October 2015:

-PUCO Homecoming CE; Jefferson Hall, Forest Grove, OR; Oct. 3

-Live Lasik Surgery Seminars for Optometric Staff and Opticians; Teplick Vision Center, Portland, OR; Oct. 22, 6:00-8:00\*

### January 2016:

-2016 Island Eyes Conference; Sheraton Maui Resort; Maui, HI; January 17-23

-OOPA Summer CE Event; The Resort at the Mountain, Welches, OR; July 16-18

### February 2016:

-Practice Management Seminar; Embassy Suites Hotel, Portland, OR; Feb. 25-27

\*Please email Cassandra Wong at [Cassandra.wong@nvisioncenters.com](mailto:Cassandra.wong@nvisioncenters.com) if you would like to RSVP to one of Dr. Teplick's CE events.

# Practice Management Tips

**BARBARA COLTER** | DIRECTOR OF CLINICAL OPERATIONS

## Avoid Denials for Cataract Post-Operative Care Billing

Did you know that the number one reason for denial of a cataract co-management claim is that the co-managing doctor has reported different codes than the surgeon? If the CPT and diagnosis codes do not match what the surgeon used, your claim will most certainly be denied.

This denial may be avoided by retrieving the precise codes from the ophthalmologist before submitting the post-op claim. For instance, if the ophthalmologist uses 366.13 (rather than the usual 366.10) you should also report 366.13 in box 21. As a side note: after October 1, 2015, the ICD-10 code H25.9 will be used instead of 366.10, and H25.039 will be used instead of 366.13.

In addition to the diagnosis code, pay close

attention to the CPT code you are reporting. In most cases, a code of 66984 will be used. However, if the case was more difficult, the surgeon might code a 66982. If you don't also change the code, your claim will be denied. Don't forget to attach Modifier 55 to whichever code has been used.

Most practices have an established post-op form they use to communicate all necessary information back to the referring doctor. If you find this is not the case, offer to help design one that will work for you both. In addition to the necessary codes, the form should contain the surgeon's name and NPI number, surgery date, affected eye (this will be replaced with the diagnosis code when we convert to ICD-10), and the date of transfer.

Because another major reason for denial is incorrect calculation of span dates, it may be helpful to use a precise "billing span calculator."

# Referral Service Contact Numbers

## **Pacific EyeClinic Forest Grove**

2043 College Way, Forest Grove, OR 97116

Phone: 503-352-2020

Fax: 503-352-2261

Vision Therapy: Scott Cooper, OD; Graham Erickson, OD; Hannu Laukkanen, OD; JP Lowery, OD

Pediatrics: Scott Cooper, OD; Graham Erickson, OD; Hannu Laukkanen, OD; JP Lowery, OD

Medical Eye Care: Ryan Bulson, OD; Tracy Doll, OD; Lorne Yudcovitch, OD

Low Vision: Karl Citek, OD; JP Lowery, OD

Contact Lens: Mark Andre; Tad Buckingham, OD; Patrick Caroline; Beth Kinoshita, OD; Frank Zheng, OD

## **Pacific EyeClinic Cornelius**

1151 N. Adair, Suite 104 Cornelius, OR 97113

Phone: 503-352-8543

Fax: 503-352-8535

Pediatrics: JP Lowery, OD

Medical Eye Care: Tad Buckingham, OD; Sarah Martin, OD; Caroline Ooley, OD; Lorne Yudcovitch, OD

## **Pacific EyeClinic Hillsboro**

222 SE 8th Avenue, Hillsboro, OR 97123

Phone: 503-352-7300

Fax: 503-352-7220

Pediatrics: Ryan Bulson, OD

Medical Eye Care: Tracy Doll, OD; Dina Erickson, OD; Michela Kenning, OD; Caroline Ooley, OD

Neuro-ophthalmic Disease: Denise Goodwin, OD

## **Pacific EyeClinic Beaverton**

12600 SW Crescent St, Suite 130, Beaverton, OR 97005

Phone: 503-352-1699

Fax: 503-352-1690

3D Vision: James Kundart, OD

Pediatrics: Alan Love, OD

Medical Eye Care: Susan Littlefield, OD

Contact Lens: Matt Lampa, OD

Dry Eye Solutions: Tracy Doll, OD

## **Pacific EyeClinic Portland**

511 SW 10th Ave., Suite 500, Portland, OR 97205

Phone: 503-352-2500

Fax: 503-352-2523

Vision Therapy: Bradley Coffey, OD; Ben Conway, OD; Scott Cooper, OD; James Kundart, OD

Pediatrics: Bradley Coffey, OD; Ben Conway, OD; Scott Cooper, OD; James Kundart, OD

Medical Eye Care: Ryan Bulson, OD; Candace Hamel, OD; Scott Overton, OD; Carole Timpone, OD

Contact Lens: Mark Andre; Candace Hamel, OD; Matt Lampa, OD; Scott Overton, OD; Sarah Pajot, OD

Neuro-ophthalmic Disease/Strabismus: Rick London, OD

Low Vision: Scott Overton, OD

When scheduling an appointment for your patient, please have the patient's name, address, phone number, date of birth, and name of insurance, as well as the type of service you would like Pacific University eye clinics to provide.