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Becoming a Healer of Children
The Boston team knows what it takes to be a leader in the GP lens market. For years we have provided products with excellent performance and high Dk. In addition, we offer education and fitter training for specialty lenses, both on our own and partnered with our authorized laboratories. It’s what our customers tell us they need to provide better vision care. And it is exactly what they can expect from a leader.

Maybe that’s why Boston® lenses are prescribed 3 times more often.*

Unmatched Support + Quality Materials = Unrivaled Leadership

* Boston lenses are prescribed 3 times more often than the closest GP competitor. Source: Survey conducted by Decision Analyst, March 2011.
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ON THE COVER:
Children—such a precious gift—and totally dependent on those who bring them into the world! When something in their visual system fails and their parents seek you out for help, are you ready to be a healer of children? This issue of EyeWitness is full of information that will better prepare you to care for one of our planet’s most precious resources—our children!
A Special Place in My Heart

Many people know that kids and contacts have a very special place in my heart. This Pediatric issue of the EyeWitness is dedicated to our littlest patients, parents, Doctors and the fitters that work so hard to help them to see—it truly is a team effort!

There is nothing that matches the experience of giving sight to a child with vision problems. Fitting kids from newborns to teens for medical or cosmetic reasons gives you a great feeling of seeing the joy on children’s faces when they can see. For them to gain the freedom that contacts offer is like no other!

We know correcting a child’s vision is extremely important. If vision doesn’t develop properly in the early years, a child may suffer for the rest of his/her life. They may not be able to qualify for the career they are interested in. They may not be able to pass a driver’s license test or have the independence they desire. Both glasses and contacts can be used to ensure correct vision for the developing brain; however, contacts offer many distinct benefits.

Contacts help with medical challenges from strabismus to trauma to myopia, as well as cosmetic needs from aiding in sports to boosting self-esteem. Contacts give a more accurate picture of the world than do glasses, which can help vision development. Since they are harder to take off than glasses, visual correction is more consistent with young children, plus they don’t break as easily.

People often ask me, isn’t it hard to fit little kids? To me that is the easy part; dealing with the big people that come with them can be the most challenging part. My advice: Be comfortable with your contact lens fitting skills, trust fluorescein patterns—so important!, play games with the child, be silly at times, but other times be firm, and above all, remember these kids may not have anyone else who will fight for their vision and you can help them!

So go out and save the world! Okay… maybe that is a little over the top but if you don’t feel comfortable dealing with fitting kids find someone that can help you. Study your fitting skills on the big patients as they can tell you how and what they feel. You will be so happy you did it!

Go Contacts!
“Healer of Children”
Buddy Russell, FCLSA, COMT

The word pediatrics is derived from two Greek words (pais = child and iatros = healer), which means healer of children. Are you a “healer of children” or do you tend to feel better about someone else assuming the challenge and responsibility? This article will discuss some of the conditions, contact lens indications, fitting techniques and challenges that are present with the young patient.

Working with the pediatric patient and their caregivers / family can be challenging, rewarding, fun, and yet sometimes frustrating. Many of these cases often include factors that are unique to the young patient. In addition to the technical challenges of obtaining objective data, the fear of uncertainty is often present. The uncertainty of the unknown can either paralyze you or motivate you to step up and simply do what must be done.

The Definition May Vary
The definition of pediatric contact lens fitting is different to different people. The fitter who works with the occasional twelve-year-old neophyte wearer will define pediatric fitting different from the person that works with babies on a routine basis. Pediatrics is generally defined as a branch of medical care that deals with infants, children and adolescents. The word pediatrics is derived from two Greek words (pais = child and iatros = healer), which means healer of children. Are you a “healer of children” or do you tend to feel better about someone else assuming the challenge and responsibility? This article will discuss some of the conditions, contact lens indications, fitting techniques and challenges that are present with the young patient.

Refractive Indications
What age is “appropriate” to fit a contact lens on a child? In the absence of a medical indication, Jeff Walline, OD and his colleagues have addressed the answer to this question in the published literature. In addition, the American Academy of Optometry published a position paper in 2004 that stated that by the age of eight, a child was able to handle contact lenses and assume some degree of responsibility. We are all aware that not all eight year olds are capable of dealing with contact lenses. For that matter, not all eighteen year olds are mature enough to assume responsibility for anything. Some of the concerns that a contact lens practitioner may have in fitting these young children include the risk of safety to the child’s health, too much chair time, physical limitations, lack of hygiene, and lack of maturity. These are all legitimate concerns when you consider the child can see well with spectacles.

CLIP Study
The Contact Lens In Pediatrics study compared 169 neophyte wearers in two age groups (children age 8–12 and teens age 13–17) over a period of three months. The summary of the clinical findings in the publication is that adverse events was low.

ABOUT THE AUTHOR
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and the younger children took a little longer to train application and removal of the contact lenses. The more impressive outcomes from this study was determined by a tool used more frequently in child psychology referred to as the Pediatric Refractive Error Profile (PREP) survey. The PREP survey is a clinically validated quality of life instrument to assess how a child “sees” him or herself. This 26-question survey revealed that contact lenses improved the child’s self image in regards to their appearance, increased confidence in themselves while participating in activities and overall satisfaction of their form of vision correction. These findings were consistent in both age groups. More than 80% of both age groups found contact lenses easy to clean and take care of as all participants were fitted with 2-week disposable soft lenses and used a multipurpose disinfection care system.

The ACHIEVE Study
The Adolescent and Child Health Initiative to Encourage Vision Empowerment (ACHIEVE) was published in 2009. Jeff Walline, OD and his colleagues designed this study to find out the effects that glasses and contacts had on the self-perception of the child. This study examined 484 myopic children 8–11 years. The participants were randomized to spectacles (n=237) or contact lenses (n=247) and followed for three years. The children were evaluated at baseline, 1 month and every 6 months for three years. The participants revealed the most dramatic areas of improvement with contact lenses compared to spectacles in the areas of physical appearance, athletic competence, scholastic competence and social acceptance. Similar to the low occurrence of adverse events with contact lenses and followed for three years. The children were evaluated at baseline, 1 month and every 6 months for three years. The participants revealed the most dramatic areas of improvement with contact lenses compared to spectacles in the areas of physical appearance, athletic competence, scholastic competence and social acceptance. Similar to the low occurrence of adverse events with contact lenses compared to spectacles in the areas of physical appearance, athletic competence, scholastic competence and social acceptance. Similar to the CLIP study, over the three year period there were only 13 adverse events among 9 subjects. In addition, the ACHIEVE study found very similar rates of myopic progression in both groups of patients over the three year period (1.08D spectacle group and 1.27D contact lens group).

What can we conclude from these two studies?
One is that we are in a position to not only help a young person see but we are also in a position to do it safely and assist the child by instilling more confidence in themselves at a young age that may impact them as they mature into an adult. Young children are accustomed to following rules. When properly trained, these same young patients may grow into some of the most compliant patients that we have in our practice. There are some practical considerations for prescribing contact lenses to the younger patient. Mary Lou French, O.D. has stated the three M’s are important for success; Maturity (good hygiene, good communication skills, signs of responsibility), Motivation (why do they want contacts? Does the child want them or just the mom or dad? Are they active in activities where freedom from spectacles is important?), Mom (is the mom / dad / older sibling willing to help?). Don’t let age be the deciding factor. Consider your position as one that may positively impact the young patient in how they “see” and feel about themselves.

We Are Not Born With Good Vision
The human visual system at birth is poorly developed, but rapidly becomes the remarkable combination of nerve tissue, muscles and optics that provide us with the sense of vision. Those babies born with “perfect” eyes have only the opportunity to develop normal vision. The information processed by the eyes is sent directly to the brain and is interpreted as vision. During the first few weeks, the child sees shapes, lines and space between objects. The child’s visible world is most usable within 8–14 inches of his/her eyes. During this time, the eyes may appear to wander. After about a month, the normal child’s eyes will appear more coordinated and they start to show more interest in looking at objects. It is usually in the third month that a child who has normal eyes can fix and follow on a near object. The growth of the eye is a dynamic process, influenced by genetics and the environment.

Early detection of any eye problem is key to treating the disorder. The prevalence of vision problems in children is higher than you might think. For example:
- 1 in 10 children are at risk from undiagnosed vision problems
- 1 in 25 will develop strabismus
- 1 in 30 will be affected by amblyopia
- 1 in 33 will show significant refractive error
- 1 in 100 will exhibit evidence of eye disease
- 1 in 20,000 children have retinoblastoma

As a result of his granddaughter and her eye problem, former President Jimmy Carter initiated a program in 2002 called InfantSEE. This program allows children to have an eye exam at a very young age at no charge to the family.
Participating eye doctors provide a more thorough exam than the busy pediatrician. As a result, there is a greater opportunity to detect and treat eye disorders that may otherwise go undetected.

“Have to” Contact Lenses
Fitting pediatric patients is not usually about routine visits and patients who want to wear contact lenses. It is about critical and often urgent situations and patients who have to wear contact lenses. The more common medical indications for contact lenses can be categorized into three groups; anisometropia, irregular corneal astigmatism and “large” refractive errors.

Anisometropia
One of the more common conditions potentially leading to a permanent loss of vision in a young patient is anisometropia. This difference in the refractive errors of the two eyes can lead to suppression of the less clear image. As a result of the non-focused eye, the brain of a young patient simply turns off the blurred eye. Early detection is key to successful treatment. Following the diagnosis of this problem being present, simply correcting the refractive error may be enough. However, it has been reported that as little as one diopter difference between the two eyes corrected with spectacles and the resultant anisokonia, can lead to foveal suppression impacting stereopsis and depth perception. The use of a contact lens or contact lenses alters the effective image size due to the vertex distance being zero compared to either the magnification or minification of the image size due to the vertex distance with spectacles. One of the most severe examples of this condition would be a child with a unilateral congenital cataract managed with spectacles postoperatively.

Irregular Corneal Astigmatism
Whether acquired or congenital, the presence of irregular corneal astigmatism of the anterior curve of the cornea is best managed with a contact lens. This condition is to be considered urgent if the patient is of a young age. The eye may forever loose the opportunity to be corrected as the resultant amblyopia develops over a short period of time. By neutralizing the corneal irregularities with a contact lens, the eye of a young child will hopefully gain enough vision improvement to avoid the potential permanent loss.

Obviously, patching the better eye may be necessary if the treated eye’s vision is not as correctable as the unaffected eye. The length of time the child is to be patched is to be determined by the pediatric ophthalmologist or optometrist, as this area of treatment is controversial. The factors that are considered include the level of vision obtained, age of the child and the condition of the other eye.

Large Refractive Errors
The optics of spectacle correction in high powers have inherent properties that include distortion, prismatic effect and minification / magnification. For instance, the decrease in image size when one views an object through high minus spectacles may result in less vision. This decrease in image size may impact the opportunity to fully develop normal vision in a young child. The smaller image size that is due to the vertex distance of spectacles may be better managed with a contact lens that has a vertex distance of zero thus providing a larger image.

“Fitting” the Caregiver
Arguably, the most important factor with young children having a good outcome is the parents / caregivers. The technical challenges that exist in these cases are secondary to the ability the fitter must possess to effectively explain and train the person or persons that will take care of the child outside of the office. They must understand the urgency of the situation, they must understand the seriousness of the problem, they must be trained to properly apply, remove and care for the lens / lenses, they must also follow any and all instructions concerning the child. Many of these parents struggle with feelings of nervousness, guilt and sadness. My strategy is to be sensitive to their feelings but not let them feel sorry for themselves too long as the clock is ticking. I provide verbal instructions, written instructions, videos, my email address and a 24-hour phone number. I welcome the caregiver to ask any question at any time. I do my best to let them know that I do care and that I want them and their child to be successful. I am tough on them. There is no good excuse not to do as I have instructed them to do.

When the child and the parent / caregiver are convinced that I am confident in my ability and they know that I do care, the partnership develops as we walk the path together. I want the child to know that they are coming to see me. I want them to know I will reward their cooperation with all phases of the visit. This positive reinforcement may be in the form of a piece of candy, a small toy or just a sticker when the child allows me to see their eye, measure their cornea or intraocular pressure or they just tell me what they can see. Kids love to please us just like they love to please their parents. Reward them for it. Whether you consider this approach bribery or positive reinforcement, it works.

Some Conditions Frequently Seen in Pediatrics
An understanding of the conditions that may be present in pediatric patients is important to not only know what they are but also understand well enough to explain to the parent or caregiver. The following is intended to be an overview of some of those conditions.
**Nystagmus**—Nystagmus is a vision condition in which the eyes make repetitive, uncontrolled movements, often resulting in reduced vision. These involuntary eye movements can occur from side to side, up and down, or in a circular pattern. As a result, both eyes are unable to hold steady on objects being viewed. Unusual head positions and head nodding in an attempt to compensate for the condition may accompany nystagmus. Most individuals with nystagmus can reduce the severity of their uncontrolled eye movements and improve vision by positioning their eyes to look to one side. This is called the “null point” where the least amount of nystagmus is evident. To accomplish this they may need to adopt a specific head posture to make the best use of their vision. The direction of nystagmus is defined by the direction of its quick phase (e.g. a right-beating nystagmus is characterized by a rightward-moving quick phase, and a left-beating nystagmus by a leftward-moving quick phase). The oscillations may occur in the vertical, horizontal or torsional planes, or in any combination. The resulting nystagmus is often named as a gross description of the movement, e.g. downbeat nystagmus, upbeat nystagmus, seesaw nystagmus, periodic alternating nystagmus. Having nystagmus affects both vision and self-concept. Most people with nystagmus have some sort of vision limitations because the eyes continually sweep over what they are viewing, making it impossible to obtain a clear image. If a refractive error is found, contact lenses may be the most effective way of obtaining best-corrected vision.

**Strabismus**—Strabismus is any misalignment of the eyes. It is estimated that 4% of the U.S. population has strabismus. Strabismus is most commonly described by the direction of the eye misalignment. Common types of strabismus are esotropia (turn in), exotropia (turn out), hypotropia (turn down), and hypertropia (turn up). Eye misalignment can cause amblyopia in children. When the eyes are oriented in different directions, the brain receives two different visual images. The brain will ignore the image from the misaligned eye to avoid double vision, resulting in poor vision development of that eye. Also, an eye that sees poorly tends to be misaligned. Treatment may involve eyeglasses, contact lenses, eye exercises, prism, and / or eye muscle surgery.

**Amblyopia**—Amblyopia, sometimes called “lazy eye,” occurs when one or both eyes do not develop normal vision during early childhood. Babies are not born with 20/20 vision in each eye but must develop it between birth and 6-9 years of age by using each eye regularly with an identical focused image falling on the retina of each eye. If this does not occur in one or both eyes, vision will not develop properly. Instead, vision will be reduced and the affected eye(s) are said to be amblyopic. This common condition, affecting up to 4% of all children, should be diagnosed and treated during infancy or early childhood to obtain optimum three-dimensional vision and to prevent permanent vision loss. What causes amblyopia?

**Misaligned eyes (strabismus)**

Misaligned eyes are the most common cause of amblyopia. When both eyes are not aimed in exactly the same direction, the developing brain “turns off” the image from the misaligned eye to avoid double vision and the child uses only the better eye. If this persists for a period even as short as a few weeks, the eye will not connect properly to the visual cortex of the brain and amblyopia will result.

**Unequal refractive error (anisometropia)**

Unequal refractive error is an eye condition in which each eye has a different refractive error and therefore both eyes cannot be in focus at the same time. Amblyopia occurs when one eye (usually the eye with the greater refractive error) is out of focus because it is more nearsighted, farsighted or astigmatic than the other. Again, the brain “turns off” the image from the less focused eye and this eye will not develop normal vision. Because the eyes often look normal, this can be the most difficult type of amblyopia to detect and requires careful vision screening of acuity measurements at an early age. Treatment with glasses or contact lenses to correct the refractive error of both eyes, sometimes with part-time patching of the better seeing eye, is necessary in early childhood to treat the problem.

**Obstruction of or cloudiness (deprivation)**

Obstruction of or cloudiness in the normally clear eye tissues may also lead to amblyopia. Any disorder that prevents a clear image from being focused can block the formation of a clear image on the retina and lead to the development of amblyopia in a child. This often results in the most severe form of amblyopia. Examples of disorders that can interfere with getting a clear image on the retina are a cataract or cloudy lens inside the eye, a cloudy and or irregular shaped cornea, or a droopy upper eyelid (ptosis) or eyelid tumor.

It is not easy to recognize amblyopia. A child may not be aware of having one normal eye and one with reduced vision. Unless the child has a misaligned eye or other obvious external abnormality, there is often no way for parents to tell that something is wrong. In addition, it is difficult to measure vision in very young children at an age in which treatment is most effective.

To treat amblyopia, a child and their caregiver must be encouraged to use the weaker eye. This is usually accomplished by patching the stronger eye. This covering of the
stronger eye with an adhesive patch, an occluder contact lens or temporary surgery often proves to be a frustrating and difficult therapy. Patching will often continue for weeks, months, or even years in order to develop normal or near normal vision and maintain the improvement in the amblyopic eye. Occasionally, blurring the vision in the better eye with eye drops or lenses to force the child to use the amblyopic eye treats amblyopia.

Surprising results from a nationwide clinical trial in 2005 reported that many children age seven through 17 with amblyopia may benefit from treatments that are more commonly used on younger children.

Treatment improved the vision of many of the 507 older children with amblyopia studied at 49 eye centers. Previously, eye care professionals often thought that treating amblyopia in older children would be of little benefit. The study results, funded by the National Eye Institute (NEI), were reported in the April issue of Archives of Ophthalmology.

**Congenital Cataract**—A congenital cataract, or clouding of the crystalline lens is present in 2–3 per 10,000 live births of children. The presence of a visually significant cataract in a child is considered an urgent disorder. The resultant form deprivation of vision requires immediate surgery to remove the obstruction, prompt optical correction and amblyopia therapy in unilateral cases. Until the 1970s, it was generally believed that there was no means of restoring the vision in an eye with a unilateral congenital cataract. However, subsequent studies demonstrated that excellent visual results could be obtained with early surgical treatment, a contact lens and patching therapy of the fellow eye. However, treatment results continue to be poor in some infants with unilateral congenital cataracts due to a delay in treatment or poor compliance with contact lens wear or patching therapy of the fellow eye. The Infant Aphakia Treatment Study (IATS) was designed to compare the visual outcomes in children 1 to 6 months of age with a unilateral congenital cataract randomized to optical aphakic correction with contact lenses or an intraocular lens (IOL). Children randomized to IOL treatment had their residual refractive error corrected with spectacles. Children randomized to no IOL had their aphakia treated with a contact lens. In previous publications we have shown that the visual results are comparable for these two treatments at 1 year of age, but significantly more of the infants randomized to IOL implantation required additional intraocular surgeries.

**Accommodative Esotropia**—Accommodative esotropia refers to a crossing of the eyes caused by hyperopia. Accommodative esotropia is a type of strabismus. Children who are farsighted easily and automatically focus on objects at distance and near through accommodation. As a result, a child who is farsighted usually does not have blurred vision. However, in some children who are farsighted, this accommodative effort is associated with a reflex crossing of the eyes. Accommodative esotropia can begin anywhere from 4 months to 6 years of age. The usual age of onset is between 2 and 3 years of age.

Full-time use of the appropriate hyperopic glasses or contact lenses will often control the esotropia. When wearing the correction, the child will not need to accommodate and hence the associated eye-crossing reflex will disappear. However, after removing the prescribed correction, the crossing will reappear, perhaps even more than before the child began wearing the correction. Sometimes the correction will only cause the crossing to disappear when the child views a distant object. However, when gazing at near objects, crossing may persist despite the use of the correction. In these circumstances, a bifocal lens is often prescribed to permit the child to have straight eyes at all viewing distances. One potential advantage of contact lenses compared to spectacle lenses when correcting hyperopic powers is the decrease in accommodative demand. The increased effort to converge the eyes with spectacles requires one to over come the resultant base out prism when viewing a near object.

**Fitting Techniques**

The techniques the contact lens professional utilizes to fit an adult with a GP lens must be altered to fit an infant or small child. The ability to capture a reliable image with a topographer or accurate keratometric readings is often impossible to obtain in small children. Keratometric readings obtained at the time of surgery or an exam under anesthesia should only be considered as a starting point or a guide to the initial diagnostic lens. The application and evaluation of a diagnostic lens is the best method to obtain an appropriate fit in small children. I utilize diagnostic lenses that do not have a UV filter. I find these lenses allow me to better interpret the fluorescein pattern when using a handheld burton lamp or LED cobalt flashlight. Once the appropriate fit has been determined, the lens is remade incorporating a material that provides an ultraviolet filter. I find it easier to determine the approximate corneal shape and curvature initially with a relatively flat fitting lens on the eye. If the diagnostic lens being evaluated vaults the anterior corneal surface, the interpretation and extrapolation of corneal curvature is difficult. As in any GP fitting, the goal is to equally distribute lens mass and provide peripheral fulcums to maintain stability and a central position. This central position of the lens is especially important in higher powers to minimize spherical aberrations. In recent years,
I have found myself fitting looser and larger GP diameters. A general rule to follow with small children and GP lenses is that a tight lens will tend to dislodge from the eye and a loose fitting lens will tend to displace off the cornea onto the bulbar conjunctiva.

As with GP fitting on small children, soft lens fitting techniques are also a bit different. In order to determine appropriate movement of a soft lens on a small child, the “spring back” test may be helpful. With the soft lens on the eye, digitally displace the lens off center. If the lens immediately “springs back” into place on the cornea, the lens may fit too tightly on the ocular surface. If the lens stays off center while manually closing the lids to mimic a blink, the lens may be fitted too loosely on the ocular surface. In addition, retinoscopy over the soft lens to determine if the reflex maintains clarity during the blink is a finding seen with a well fitting lens. If the reflex is clearer with a blink, the fit may be too steep. If the reflex is worse with a blink, the fit may be too flat. The reflex seen with a well-fitted soft lens will maintain the same clarity before, during and after a blink. The retinoscope is not only used to determine the final lens power with any type of lens but also an important instrument to guide you to the best cornea lens relationship. Pediatric fitters of contact lens should be proficient with a retinoscope.

Little Lenses for Little People?
The pediatric contact lens professional is not limited to “off the rack” products. In addition to custom GP lenses, there are many lens manufacturers of custom made soft and silicone hydrogel contact lenses that allow us the opportunity to provide any child any parameter. In addition, liberal exchange policies implemented by manufacturers of custom products allow us to provide these products to the patients who require them in a fair and effective manner. However, the delay in time to deliver the product to a pediatric patient in an urgent situation is a potential problem. Any delay in optical correction and visual rehabilitation with a young pediatric patient may result in permanent loss in vision.

Silicone Hydrogel Custom Products
After many years of anticipation, in 2010 Contamac received FDA approval for Definitive, a latheable silicone hydrogel material. The Definitive material can be manufactured by a limited number of laboratories in the U.S. in virtually any group of parameters. This inherently wettable, high water content and low modulus material has a dk of 60. While 60 dk is not as high as other “off the rack” silicone hydrogel materials, the effective dk in many of the parameters utilized in pediatric fitting is higher than the same parameters made in HEMA/GMA materials. While this material is a welcome addition to our armamentarium of contact lens options in our practice, my clinical experience specific to pediatric indications and this material has led me to two conclusions. The application of a lens to the eye of a small child manufactured in the Definitive material is more difficult than HEMA/GMA materials and the time delay of up to ten days is often too long in an urgent case common to the pediatric patient. In time, both of these concerns can be overcome with practice and improved efficiency on the part of the patient, the practitioner and the laboratory.

New News About an Old Lens
Silicone Elastomer (SilSoft® Super Plus) has a long and well-documented history of being the lens of choice for the majority of pediatric professionals to manage small children following cataract surgery. The truth is that there would be many “blind” children if not for this particular lens. SilSoft® Super Plus contact lenses for pediatric aphakia (>20 diopters) are available with the following parameters: diameter, 11.3mm, base curve: 7.5 mm (45.00D), 7.7mm (43.75D), and 7.9mm (42.75D), optic zone of 7.0mm and powers ranging from +23.00D to +32.00D in 3D steps. The SilSoft® Super Plus material has an oxygen permeability (Dk) value of 340, with oxygen transmissibility (Dk/t) of 58 at 0.61mm. One of the shortfalls of SilSoft® Super Plus has been the limited availability of parameters. As a result of the tireless efforts of Joe Barr, O.D., B+L may ultimately decide to expand the parameters of their Silsoft® Super Plus product. While this announcement is far from official at the time of this article, I would like to applaud Joe and encourage you to do the same. Whether you are a proponent or opponent of Silsoft, any improved technology to provide children with the opportunity to safely develop better vision is worthy of the efforts. On behalf of the industry, the children and their families, thank you, Joe.

Conclusion
As contact lens professionals, we have the responsibility, opportunity and privilege to provide products and services to young patients and their families. These products and associated services are necessary to maintain and or develop possibly the most important gift one may ever possess, the gift of sight. Again I ask you, are you a “healer of children”?

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Healer of Children

Successfully Complete These Questions to the Article on Pages 3–8 to Receive NCLE Credit.

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Credit Card: □ American Express □ Discover □ MasterCard □ Visa
Card Number ____________________________
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1. What is the most common cause of amblyopia in children?
   a. Nystagmus
   b. Misaligned eyes
   c. Anisometropia
   d. High refractive error

2. Which study was conducted to help determine self-perception with contact lenses vs. spectacles?
   a. SPPC
   b. CLIP
   c. ACHIEVE d. PREP

3. Which condition refers to the eyes crossing as the result of hyperopia?
   a. Accommodative esotropia
   b. Strabismus
   c. Nystagmus
   d. Aniseikonia

4. When using the “spring back” test, a lens which fails to recenter on the blink is:
   a. Too tight
   b. Too loose
   c. Appropriately fit
   d. Inside out

5. The “null point”
   a. Is the point at which there is no motion in the retinoscopic reflex
   b. Is a nystagmatic oscillation in the torsional plane
   c. Is the point where the least amount of nystagmus is present
   d. Is the starting point in a retinoscopic exam

6. What percentage of the population has strabismus?
   a. 2%
   b. 4%
   c. 5%
   d. 10%

7. When deciding whether or not to fit a pediatric patient with contact lenses, the least concern is:
   a. Hygiene
   b. Maturity
   c. Physical limitations
   d. Chronological age

8. According to Mary Lou French, OD, what are the 3 M’s of success?
   a. Maturity, motivation and mom
   b. Maturity, motivation and money
   c. Motivation, medical history and maturity
   d. Motivation, motivation, motivation

9. Which lens material has a Dk of 340?
   a. Definitive
   b. Menicon Z
   c. Silicone Elastomer
   d. HEMA-GMA

10. With which eye condition is it almost certain to see eye crossing?
    a. Anisometropia
    b. Accommodative esotropia
    c. Nystagmus
    d. Irregular corneal astigmatism

11. Infants who receive an IOL will:
    a. Never see as well as one managed with a contact lens
    b. See far better than one managed with a contact lens
    c. Fare the same as one managed with a contact lens and permanently avoid the trauma of surgery at an age that can be remembered
    d. Fare the same as one managed with contact lenses but will probably face additional surgeries

12. Strabismus in which the eye misaligns downward is:
    a. Hypertropia
    b. Esotropia
    c. Hypotropia
    d. Exotropia

13. At what age will a child develop 20/20 vision if he is born with perfect eyes?
    a. 2-3
    b. 4-6
    c. 6-9
    d. 9-12

14. Which studies findings showed the frequency in adverse events to be low in children?
    a. CLAMP
    b. CLIP
    c. PREP
    d. SPPC

15. Because the vertex distance of a contact lens is zero, eyes with two different Rx’s will see the image in each eye almost equal, thus avoiding:
    a. Anisokonia
    b. Depth perception
    c. Stereopsis
    d. Strabismus

16. A condition that prevents clear focus and may cause a patient to tilt the head to help better fixate his sweeping focus is:
    a. Strabismus
    b. Amblyopia
    c. Hypertropia
    d. Nystagmus

17. A caregiver may be instructed to patch the stronger, better-sighted eye of a child to avoid_________ in the weaker eye.
    a. Nystagmus
    b. Amblyopia
    c. Strabismus
    d. Crossed eyes

18. The best method to fit an infant with a GP contact lens is:
    a. Solely on the k-readings obtained during EUA
    b. Using the fitting software on the topographer
    c. Diagnostic lenses and fluorescein interpretation
    d. Exactly the same as an adult

19. A retinoscopy reflex over a soft lens that clears with the blink indicates:
    a. Too much plus power
    b. Too much minus power
    c. A flat fit
    d. A steep fit

20. What is the biggest problem with custom made lenses for pediatric patients?
    a. The delay in getting the product
    b. The cost of the product
    c. The lack of reproducibility
    d. The fact that there are no custom made products

Please Record Answers Below by filling in appropriate circle

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Be inspired by the highlights that make 2012 special:

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Register today at www.clsainfo
There are few clinical contact lens related situations where time is of the essence and some urgency and timeliness is required.

One, certainly, is in cases of infantile aphakia; the post-surgical result of congenital cataracts. Applying correction to those infants quickly is one of the more important things we do and we are that lucky in our group, here at the CLSA, we have pediatric experts in our ranks to teach us about those cases better than I can, certainly.

Otherwise, we manage the challenge of helping our patients in the natural course of time.

Time. The hectic nature of our schedules is a constant reminder of the demands of time. “Time” is such an extravagant luxury anymore and it didn’t used to be. Times have changed.

There was quite a different concept of time back in the day. Our ideas about time were simpler then. Way back then, there were only big chunks of time each day. There was the Dawn, then the Time for Breaking the Night’s Fast, Midday, After Midday, Dinner Time and Nighttime.

But things changed forever with the invention of accurate timepieces (around 500 years or so ago) Those damned clocks allowed us to break the day down into smaller units of time; hours, minutes, seconds, and now, even nanoseconds. Even more importantly, we could now coordinate things with someone nearby or a long distance away because, for better or worse, everyone, everywhere could keep the same time. We developed timed, coordinated schedules so we could be more efficient, productive and organized.

Seemed like a good idea at the time.

But, ever since the invention of those accurate timepieces all those centuries ago, we somehow seem to have less and less time. Those tick-tock-ticking clocks have taken over our lives so that most of us know where and when we have to be for weeks in advance, right down to the minute. We carry our schedules around with us now, with bells and dings to remind us of how late we are.

Although we live almost twice as long as our ancestors did in the 15th century, we seem to have less and less time.

We have become obsessed with time. If you think about it, without really being aware of it, we talk about time all the time.

- We try to save time or make time and find the time.
- We’re sometimes guilty of wasting time so, If we find ourselves with time on our hands then we have time to kill and, consequently, we can end up killing time.

- It’s a good time or a bad time.
- If we arrange it, maybe we could spend some time.
- When we’re young and we’ve misbehaved, we can get a time out.
- When we’re older and we’ve misbehaved, we could be doing time.
- Taking the time and giving the time seem to mean about the same thing.
- When we consider if we want to do anything, we first have to check to see that we have the time.

All of us have only so much time. That goes for you and your patients. That makes your time and their time equally valuable, doesn’t it? In the incredible happenstance that you and your schedule and your patient and their schedule criss-cross timelines at any given time is important.

It’s so difficult, when it’s hectic and frantic, to take a deep breath before you see the next patient and remember that you and the patient are on each other’s schedules right now and this time, any time, is valuable and it’s precious.

Usually, when I hear a remarkable story about a colleagues’ miracle contact lens success story, it’s not just a matter of their extensive training and experience, it’s because they were the one that really, finally, took the time.

It’s really about time.
Some of the most rewarding patients we can work with are babies born with congenital cataracts. Fortunately, the incidence of this condition is only 3 to 4.5 per 10,000 of new births. When they do occur, it is imperative to treat the visual system within the first few weeks, post surgery.

Congenital cataracts can develop secondary to intrauterine infection as well as a host of metabolic and inherited conditions, however the cause often remains undetermined.

Treatment Options
Glasses are one method of treatment. These babies require very high plus correction so the glasses are very heavy on an infant. Controlling the baby from displacing the glasses is a difficult effort. These high plus powered glasses have a smaller, optical center that require the spectacle lens to be properly positioned or visual distortion will result and the treatment is not optimized. Glasses can create optical aberrations, unwanted magnification of images and peripheral distortions. In cases of unilateral aphakia, glasses create tremendous distortion and imbalance due to aniseikonia and prismatic effects.

Contact lenses are universally regarded as the best treatment option for infants who have had congenital cataracts removed. The fitter must decide between soft and gas permeable (GP) contact lenses.

Soft Lenses
The most fitted contact lens for these patients is the SilSoft® contact lens. It is a 100% silicone lens developed by Dow Corning Ophthalmics in the early 1980s. That design did not prove commercially successful on adult eyes and was taken off the market. Bausch + Lomb purchased the material and continue to produce the pediatric aphakia line. Its popularity comes from a 340 Dk and is approved for extended wear.

Parameters are limited, however. Powers range from plus 23.00 to 32.00D in 3D increments. Only three base curves, one diameter and one edge lift are available.

GP Lenses
Larger diameter corneal GP designs are an acceptable fitting alternative. The Menicon Z™ material, 163 Dk, is approved for extended wear and it holds up well in pediatric patients.

The two biggest benefits from custom GP designs are the fitting flexibility it gives the fitter and it offers the best optical quality. Most any parameters can be manufactured including any base curve, optical zone, diameters, power, and edge lift. Other benefits are easier insertion and removal and low bacterial and protein adhesion.

Fitting
In reviewing Dr. Dan Saltarelli’s (of Cincinnati Children’s Hospital) final fits with GP designs, the usage pattern is: 32% = 10.0 diameter, 21% = 10.4 diameter, 17% = 11.2 diameter and the rest in between those diameters. This suggests a diagnostic set in a 10.4 diameter would be the most effective. Larger or smaller Rx diameters can be extrapolated from the diagnostic fitting results.

Figure 1

Figure 2 and 3 shows the power and base curve distribution by age for 22 infants.

One method of diagnostic fitting is to start with a 7.00mm base curve, 10.4mm diameter lens and follow the fluorescein pattern. A slightly steep fit is acceptable.

Compute the final lens power from the vertexed, over refraction.
For infants not walking, add an additional 2–3D of plus power. For walking infants, add an additional 1.00 to 1.50D of plus power. At 2 years of age, do not over correct the distance plus power, bifocal glasses are recommended.

In unilateral cases, the fellow eye must be occluded. If your vertex chart does not go high enough, check or download the vertex calculator at www.gplicinfo, www.lensdynamics.com under Products, Specialty Lenses, from the home page, or check with your GP lab of choice for options.

**Wearing Schedule**

**Week 1**  Daytime only.

**Week 2**  Extended wear, but remove and clean every 2–3 days.

**Week 3**  Extended wear, but remove and clean weekly.

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**Additional Reading**


Dr. Dan Saltarelli of Cincinnati Children’s Hospital contributed clinical information for this article.
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Get Certified ★ Stay Certified

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For additional information and to register, visit www.abo-ncle.org
The World of Contacts
Pre-Teen and Parents: Are You Ready...Set...Apply!
A Guide of Expectations for the First Time Contact Lens Wearer
Sherrie Lee Young, NCLE-AC, ABOC, FNAO

The children are our future and we can aid in helping them see this future more clearly. It truly starts at the basics and making sure the patient and parents understand the commitment to this medical device we so commonly call contact lenses.

I remember my first appointment for my contact lens fitting! I thought the day would never come. I was nervous of the unknown, yet excited with the anticipation of no more, big, plastic, monograph sticker initial on the lens, swoop-di-do 1980s frames! The examination room was no larger than a closet. I found myself seated in front of a mirror, and these small round pieces of plastic in my eyes that could make me see and tear all at once! It was a very frustrating day for me because I was not able to easily apply the lenses to my eyes, but I vowed that I was going to conquer this, no matter how long it took! With my strong will and the anticipation of showing all my school friends the new me without glasses, I did it. For those of us that wear contact lenses, I’m certain we all have a memory hidden far away of that first experience with contacts. I find myself today telling my first time patients “no one ever talks about their first day with contacts, it will get better, trust me! You will be an ‘expert’ by next week’s follow up visit!” (Tongue in cheek, as we all know how new fits can go.)

The children are our future and we can aid in helping them see this future more clearly. It truly starts at the basics and making sure the patient and parents understand the commitment to this medical device we so commonly call contact lenses. The American Optometric Association (AOA) reports 30 million Americans wear contact lenses and 10% of these wearers are 18 years old and younger. This number is rapidly growing.

I feel it is most important to explain and identify what the children’s visual needs are and if contact lenses are an option. I have found this is best done in a manner in which both the patient and their parents can understand. Do not use too many technical terms so they feel you are talking over them, but rather explain in a way that creates creditability to you and your skills as a professional! Gain their trust and they will respect not only you but the new contacts they seek as well. The visual system and its pathways have usually developed by the age of nine years and will not improve. The vision can; however, be successfully corrected with contact lenses.

**Visual Conditions**

I have provided some definitions that might help in explaining the more common ocular conditions.

**Myopia**

Nearsightedness occurs when light entering the eye is focused in front of the retina because the axial length of the eye is too long. This will make objects in the distance appear blurry. Nearsightedness is commonly noticed first in school-aged children and can be corrected with contact lenses.

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**ABOUT THE AUTHOR**

Sherrie started in the optical industry in 2001 as an optician at Mauer Eye Center & Medical Spa in Waterloo, Iowa. In 2002 Sherrie accomplished both NCLE & ABOC certifications. She found that her passion was in fitting contact lens and became NCLE-AC (advanced certified) in 2006. Sherrie served as manager of the Mauer Eye Center Contacts lens department for 7 years. Sherrie is currently in her 4th year as the director of the contact lens department at Des Moines Eye Surgeons/ Eye Designs in West Des Moines, Iowa. The department specializes in irregular corneas and presbyopic fittings. Presently she is working toward her Fellow with the Contact Lens Society of America. Sherrie is a graduate of Iowa State University.
children and teens when they struggle seeing the whiteboard or power point presentations in their classroom, but can often easily read a book. As a rule, nearsightedness gets worse during the growth years. Normally, this progression stops after a person has stopped growing in their early twenties. There are many choices of contact lenses to help focus the light correctly so that nearsighted patients can see clearer in the distance. Soft contacts will not stop or even slow the progression down but will help the patient to see. Gas permeable (GP) lenses can also help the patient to see and some studies suggest that certain rigid designs may slow down the progression of myopia. Regardless the contact lens choice, myopia will still progress.

Hyperopia
Farsightedness occurs when light entering the eye is focused behind the retina. This is caused by the eye being too short or in some cases, too weak to focus the images. This will make it more difficult to see near objects. Farsightedness is present from birth, but since the crystalline lens of the eye is flexible in youth, children are often able to accommodate and overcome the farsightedness. In most cases, children outgrow this condition, but contact lenses can easily help correct the vision. Some common symptoms of farsightedness are eye strain, headache while reading, blurred vision of close objects and crossed eyes (strabismus). A patient will be more likely to be farsighted if they have a family member who has the condition.

Astigmatism
The cornea, or some structure within the eye is not spherical in shape, but instead curved in shape making it more difficult to focus clearly on objects. The poor focus is caused by some of the light rays focusing on the retina while other light rays do not. Astigmatism can occur in both myopic (farsighted) and hyperopic (nearsighted) patients and in some cases can be mixed causing one meridian to be nearsighted while the other meridian farsighted. An easy explanation of astigmatism may be that the cornea or internal structure of the eye is shaped similar to a football rather than a basketball as you would expect it to be if astigmatism were not present. You can use whatever analogy fits the patient: rugby ball vs. baseball or golf ball. You could also demonstrate this to the patient by having a ball cut in half and squeezing it slightly. Astigmatism can be with-the-rule (horizontal ellipse shape) or against-the-rule (vertical ellipse shape). The cause for astigmatism is unknown but it is very common and usually present from birth. Toric contact lenses that have two powers in them to correct the different meridians are designed to help the light rays focus sharply on the retina. Patients with -0.75 to -1.00 diopters of cylinder and higher can benefit from soft toric lenses, or possibly a GP design depending on where the astigmatism is located.

Strabismus
This condition is the misalignment of the eyes which causes one eye to turn. This creates two images for the brain to view. In younger children, the brain recognizes the images of the straight or stronger eye and ignores the images from the eye that turns. If this is not corrected it can result in a permanent vision loss known as amblyopia.

Appropriate Choices for First Time Patients
You will encounter many of the pre-teen and teenage first time patients who are becoming more self-conscious with their current glasses or are involved with activities that contact lenses would allow them better peripheral vision and a safer option over glasses; such as sports requiring a helmet. What is the appropriate age to start wearing contacts? The Contact Lens in Pediatrics (CLIP) Study has proven that children between ages 8-11 years old were able to independently care for and successfully wear daily disposable/single use contact lenses. However, many eye care professionals begin to encourage contact lens wear at ages 11 to 14. This is ultimately a decision between the child’s parents, you and the doctors you work for. You must consider what fits the visual needs of the patient. Some very young children are required to wear contacts due to a variety of vision conditions which may include amblyopia, most commonly known as “lazy eye,” or congenital cataracts.

Once you have determined that contact lenses are appropriate for the patient’s visual needs you can discuss the various lens options. Contact lenses are either soft (hydrogel or silicone hydrogel), gas-permeable (GP) or a combination of both called a hybrid lens (GP center with a soft outer skirting). Not all contact lenses currently offer ultraviolet (UV) protection but some materials do. UV-blocking contacts lenses can reduce the effects of the sun’s harmful rays to the cornea so I would recommend using a material with this protection when available. Researchers do suggest that children wear protective eyewear in addition to the contact lenses (even those that offer UV protection) to completely cover and protect the eye.

Soft Contact Lenses
Soft contact lenses are traditionally made from soft water-containing plastics called hydrogel polymers. Oxygen is carried through the lens to the eye utilizing the water content since the plastic itself is not oxygen permeable. Water can only carry so much oxygen and the more water you put in the lens the more fragile it becomes. Higher water content lenses also have a greater tendency to dehydrate after several hours of wear. It is essential for the health of the cornea to receive oxygen. Silicone is an oxygen permeable material and combined with hydrogel, studies report silicone hydrogel lenses transmit 3–5 times more oxygen.
through the lens to the cornea. This increase in transmission is accomplished by both polymer content and water. Silicone hydrogel lenses are less likely to dehydrate because they contain less water than traditional lenses and therefore offer better end-of-the-day comfort. Silicone hydrogel lenses come in many different planned replacement options and are a healthy choice for first time wearers if worn properly.

**Daily Disposables**

Daily/single use disposable soft contact lenses are a healthy and hassle-free choice for first time wearers. This is my lens of choice when possible. The lenses are available in traditional hydrogel materials as well as the preferable, more breathable, silicone hydrogel option. Daily disposable lenses are available in limited toric designs if needed. They are convenient, comfortable and virtually hassle free. The lens is simply discarded at the end of the day so there is no need to worry about solutions and disinfection of the lens. Because a new lens is worn each day, there is usually a decrease in ocular complications. This can be attributed partly to the lack of cleaning required or solutions that can be toxic for some patients. Daily disposables are a great option if the patient is planning on part time lens wear or has seasonal allergies.

**HEMA and Silicone Hydrogels**

Soft daily wear contact lenses are also available in many different materials and wearing schedules. The lenses must be removed nightly and cleaned and disinfected properly with either a multipurpose or hydrogen peroxide solution system. Soft daily wear lenses are made to be disposed of on a planned replacement schedule of two week, monthly, quarterly and yearly, depending on the manufacturer recommendation. It is important to relay to the patient the longevity of a daily wear lens starts from the time you open the blister pack, not that number of days you wear the lens! The replacement schedule of contacts is similar to a carton of milk in the refrigerator. It might look like milk but if it has been open and past the expiration date, it is neither advised nor healthy to consume. Currently there are several tools to help patients remember to change their contacts, order an additional supply or schedule a routine eye exam. ACUVUE® ACUMINDER™ is a free online service by VISTASKON® that will text or email patients these reminders. Lenstoss iPhone App is another way for technology to keep us compliant. The app created by optometrist, Dr. Troy Flax can be downloaded thru the iPhone, iPod Touch and iPad. Possibly not as effective, but a sticker or post it note on a calendar reminding the patient to change their contacts on the first and fifteenth of the month for two week disposables and the first day of the month for monthly disposables is an option as well.

**GP Lenses**

Because GPs are a stiffer lens material, they give a sharp image for the patient, especially patients who have corneal astigmatism or an irregular cornea. Traditionally GPs have been the first lens of choice for these patients because they are smaller, easier to handle and maintain. The selection of GP material as well as lens design and fit is critical to patient success. For some patients, there is a longer adaptation time to adjust to the comfort of the lens and to building up wearing time. GPs are susceptible to displacing in the eye and irritation from elements such as wind and dust. Recommended solutions approved for GPs should be used for cleaning and storing. In addition, a weekly or bi-weekly deeper enzymatic cleaning may be necessary to remove protein build up on GP lenses.

**Hybrid Lenses**

Hybrid lenses would be a perfect choice for a patient that likes the sharp vision of the GP but is not able to tolerate the discomfort or handling of the lens. Hybrid lenses manufactured by SynergEyes® has a GP center surrounded by a soft HEMA or a silicone hydrogel skirting depending on the exact design chosen for the patient. This lens can be selected for either routine patients or those with more challenging corneas. This lens is able to correct for astigmatism with less axis shifting problems that are associated with some soft toric designs since it is rotationally symmetric. The SynergEyes lenses are disposed of every six months and replaced with a new set. Hydrogen peroxide based solutions are recommended for disinfection and storage and a preservative free saline is used for insertion.

**Are You Ready?**

You must also take into consideration the level of maturity and motivation of the patient. It is very important to make sure they are motivated and it’s not just the parents wanting the child to wear contacts. There are parents who feel wearing contacts will be a less expensive option than replacing broken or lost glasses. We, as fitters, need to make sure that they are educated that contact lenses are a supplement to glasses not a replacement option. Providing a written contact lens “game plan” and financial quote is very beneficial. The “Contact Lens Agreement,” as I like to call it, should give the parents an accurate account of the costs they will encounter. They very often do not realize that there is a fee involved in the process of fitting the contact lenses. Take this opportune time to explain and educate the patient and parent that a contact lens is not a “one size fits all” product. Contact lenses are considered a prescription device by the Food and Drug Administration (FDA) and are regulated by the Federal Trade Commission (FTC). To purchase lenses, a patient must have a valid prescription for
contact lenses, which requires a fitting be done by a proper eye care professional (ECP) and the prescription is generally valid for one year. An eyeglass prescription is not the same as the contact lenses and is often confusing to the first time lens wearer. During the fitting appointment there are certain parameters that need to be determined first such as base curve, diameter, power and lens material, brand and lifestyle. It is essential to have a properly fit lens to avoid causing irritation or serious health issues to the eye. You should also explain how many appointments the fitting fee will cover and when this fee needs to be paid. I find it helpful to break the cost down on the quote sheet listing all fees. For a soft disposable patient, I may include a per box price, the number of boxes required for an annual supply and the price, manufacturers mail in rebates as well as insurance benefits if applicable. This is also a great time to talk about any in office discounts on annual contact lens supplies or additional bundle discounts when glasses or sun wear are purchased at the same time. Encourage the purchase of an annual supply and explain the advantages of purchasing this way. Offer to drop ship directly to their home. It will not only offer savings to the patient, but patients who purchase this way are typically more compliant. It is very important that questions are addressed concerning the out of pocket financial obligations before the fitting appointment occurs. The parents should sign the Contact Lens Agreement and you should provide them with a copy. Retain a copy for the patient records as a reference.

### Adverse Effects

It is also our duty to advise the patient and parents of the possible adverse effects due to negligent contact lens wear and improper hygiene. Our body has a natural defense system that protects the eye, but placing a contact lens on the eye can add stress to the system resulting in inflammation and infection. Commonly seen complications associated with contact lens wear are; giant papillary conjunctivitis (GPC), corneal neovascularization, contact lens induced peripheral ulcer (CLPU), contact lens induced acute red eye (CLARE), infiltrate keratitis, corneal abrasions and edema. I have a poster strategically placed adjacent to the sink used by the contact lens patients depicting these contact lens induced conditions. I reference this poster daily to new and non-compliant patients.

### Microbial Keratitis

Contact lens induced infections are rare but according to reports, 4 in 10,000 daily wear annually and 20 in 10,000 extended wear contact lens wearers annually suffer adverse effects. Risk factors are: overnight wear of contact lenses, disinfecting lenses improperly, and poor storage case and hand hygiene. A rare but very serious infection on the cornea associated with contact lens wear is microbial keratitis. This can occur when micro-organisms, bacteria, fungi or amoebas contaminate the

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### CONTACT LENS AGREEMENT

**DATE___________________**

**PT. NAME____________________________________________________**

**PT. D.O.B.____________ Email:__________________________________**

**CONTACT LENS FITTING FEE  $______________**

- **New Fit**
- **Re-Fit**

Fees include three visits. Amount due at time of fitting. Fees are non refundable.

**BRAND OF CONTACTS        __________________ / ____________________**

- **Daily**
- **2 week**
- **monthly**
- **quarterly**
- **daily wear/yearly**
- **RGP**
- **SV**
- **Mono Vision**
- **Multifocal**
- **Multifocal Toric**
- **Toric**
- **Aphakic**

**Option 1**

Per box/per contact **Right** $__________________

Per box/per contact **Left** $__________________

Manufacturers mail-in rebate $__________________

1 year supply # boxes ___________ 6 month supply # boxes ___________

**INSURANCE:**

- **Avesis**
- **Medicare**
- **VSP**
- **Other____________________________**

- **(-)Ins. Coverage /or ED discount $**

- **Shipping fee $**

- **Balance due $**

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1 have read and understand the above information. Prices quoted today are valid for two months pending the finalized prescription, brand of contact lens and insurance coverage. If more than three visits are required a $30.00 per visit fee may be assessed. I agree to be personally and fully responsible for all charges and payment of the contact lens services and supplies before any products are dispensed.

X __________________________ Date ____________

Contact Lens Specialist____________________________

ORDER • CALL 2 ORDER • TRIALS • SUPPLY
Contact Lens Care and Handling Tips for New Wearers

- Wash hands with soap that is free of oils, lotions and perfumes.
- Dry hands with lint-free towel before handling the contacts and avoid touching facial tissues.
- Use fingertips to handle the lenses…avoid fingernails.
- Check lenses to make sure they are not inverted (bowl or taco shape method).
- Soft toric lenses should have indicator lines in proper place for best vision and comfort.
- Sit down, in front of a mirror when applying and removing lenses, keeping elbows off the table and head straight forward.
- Keep both eyes open when applying lenses.
- Apply the lenses with the hand you write with. (i.e. right handed use right hand to apply both lenses)
- Remove lenses with hand closest to that eye. (i.e. right hand removes right lens)
- Teens wearing make-up should apply contact lenses first, before applying make-up.
- Remove contacts before taking off make-up.
- Use preservative free rewetting drops if needed. No more than 4 times a day and only if needed.
- Only use recommended name brand contact lens solutions. NEVER use generic or store brand solutions.
- Do not EVER use tap water, homemade saline solutions, and saliva and/or put lenses in your mouth to moisten them. These sources are full of bacteria and can potentially lead to infection.
- Wear and replace contact lenses according to the schedule prescribed by the practitioner.
- NO sleeping, napping, rubbing your eyes, swimming, hot tubs, showering or tanning beds while wearing contact lenses. This can lead to serious eye health problems.
- Never share contact lenses with friends. They are a medical device prescribed uniquely for your eyes only.
- If you experience symptoms such as redness, pain, tearing, increase light sensitivity, blurry vision, and discharge or swelling, remove the contact lenses and call your practitioner immediately.
- Follow up care is a very important part of wearing contact lenses and it is vital to keep ALL appointments. Contact lens prescriptions cannot be released until a successful fit is determined.

Surface of the contact lens then attack the cornea. Microbial keratitis is the only contact lens related condition that can be potentially sight threatening and prompt treatment is important to prevent vision loss. Acanthamoeba keratitis is another rare vision threatening micro-organism. According to the Centers for Disease Control and Prevention (CDC), Acanthamoeba keratitis is more common in contact lens wearers; however, anyone can be affected. Acanthamoeba is a single-celled organism that can be found in nature, bodies of water, soil and air and causes severe insult to the cornea. Potential risk factors are exposure to contaminated water, hot tub, swimming and showering while wearing contact lenses and a history of trauma to the cornea. Acanthamoeba keratitis is very difficult to treat and in some cases results in cornea transplant.
Thorough Preparation Leads to Good Results

Next review the process of what is going to happen at the application and removal appointment so both patient and parent are prepared for the amount of time to allow for the next appointment. It is good to allow at least 1 to 1½ hours for their training appointment. I prefer and strongly recommend the patient not have an activity scheduled immediately following this appointment. I find they are often preoccupied about getting to or missing the next activity such as a sports practice. This can also make them feel hurried in the learning processes. I reassure the patient that it will not hurt or be painful and I compare the sensation of wearing a soft contact lens to having an eye lash in the eye for the first few seconds after application and this quickly goes away as the eyes adapt. Prepare not only the patient, but the parents as well that they must be able to successfully apply and remove the contact lenses on their own before wearing them home. If this does not happen at the first training appointment we will schedule additional training times. I have found that pre-teen and teenage boys are often more difficult to teach since they are not applying make-up as are some of the girls in the same age range. On some occasions, I have found boys have a slight fear of “being poked in the eye.” I attribute this to a flash back of playing sports too roughly or being told by elders “if you do that you will poke your eye out!” It’s a fear that can be alleviated with reassurance and guidance.

After advising several times about proper hand hygiene, I often simulate how I will want them to open their eye up wide from middle of the top eye lid by holding the lashes up and pulling down in the middle of the lower lid. Normally I send a gel drop home for the patient to put on the finger that is going to apply the contact lens. If they are able to keep both eyes open while their finger comes close to the eye and can hold the eye open for a count of three to four, then they will be more prepared once it comes time to handle the real lens. I like to tell patients that they are “stronger than their eye lids” so I know they can do this and fight the urge to blink.

Conclusion

You can now see, there is a lot involved with preparing not only the patient, but the parents on what the first time contact lens experience will entail. I feel being translucent about all aspects of the process is the best policy and will gain you a successful patient for as long as they wish to wear contacts. In closing, I would like to add, the average age of most of my patients is mid to late 60s, so these pre-teen & teenage patients have many, many more years of healthy contact lens wear to look forward to as long as they continue with the proper habits you instill in them!
1. 30 million Americans wear contact lenses, what percentage are teenagers or younger?
   a. 12%  b. 15%  c. 10%  d. 18%

2. After what age is the visual system fully developed?
   a. 10  b. 17  c. 12  d. 9

3. If light entering the eye is focused incorrectly and axial length is too long, you are considered?

4. Eye strain, headache while reading and crossed eyes are all signs of:

5. A child is more likely to be farsighted if:
   a. they sit too close to the TV  b. a family member is also  c. they have an astigmatism  d. they are amblyopic

6. The misalignment of the eyes which makes one eye turn in is called?

7. If the Astigmatism is vertical ellipse in shape it is considered:

8. The CLIP report has proven children ages 8–11 can independently take care and successfully wear what kind of contact lenses?
   a. RGP  b. Toric  c. Disposable/single use  d. Hybrid

9. What age do most eye care professionals encourage contact lens wear?
   a. 8–11  b. 11–14  c. 10–12  d. 12–15

10. An eye that did not develop normal vision is considered:

11. Which material uses its water content to carry oxygen to the eye?

12. Silicone Hydrogel lenses are less likely to dehydrate during the day since they:
    a. Contain high levels of water  b. allow more oxygen to the cornea  c. Contain less levels of water  d. allow less oxygen to the cornea

13. Hybrid lenses should be replaced every:
    a. 3 months  b. 6 months  c. 1 months  d. 12 months

14. What is the first thing you should have a child do if he experiences pain, tearing or redness while wearing lenses?
    a. Tell their parents  b. Tell their doctor  c. Rinse the lenses and re-apply  d. Remove the lenses from their eyes

15. Which condition is the biggest threat to sight?
    a. Giant papillary conjunctivitis  b. Infiltrate keratitis  c. Microbial keratitis  d. Corneal abrasion

16. What number of daily wear users is reported to have contacts lens induced infections per year?
    a. 4 in 10,000  b. 20 in 10,000  c. 4 in 20,000  d. 5 in 10,000

17. Acanthamoeba is not found in:
    a. Air  b. Food  c. Lakes  d. Hot tubs

18. According to the CDC contact lens cases should be rinsed with _____ and left open dry after each use.
    a. Tap water  b. Rewetting drops  c. Sterile contact lens solution  d. Saline solution

19. When fitting children with contact lenses:
    a. Only the parent’s desire for child to wear them matters  b. Supplement with UV protecting sunglasses, even if contact lens has UV protection  c. One day disposables are the only modality that should ever be used  d. Only the parent needs to know how to apply and remove the lenses

20. What is not a risk factor for a contact lens induced infection?
    a. Poor hand hygiene  b. Sleeping in contact lenses  c. Disinfecting lenses properly  d. Storage case rinsed with tap water

Please Record Answers Below by filling in appropriate circle.

1. a b c d
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Managing Kids: The Whole Toolbox—and More!

By Kathy Mc Nelis, ABOC, NCLE-AC

It isn’t every day in a medical contact lens practice that the entire office wanders into the fitting area and volunteers to help with the fitting. It is also a rare and wonderful experience to fall madly in love with your patient, even knowing that your relationship will not be a lasting one. But that is really what happened in this case of fitting a baby with scleral contact lenses.

Chief Complaint

Baby girl is a 6 month old with multiple complications associated with prematurity and a variety of neurological complications. She has been referred to us at the Scheie Eye Institute by Dr. B., who is a pediatric ophthalmologist at the Children’s Hospital of Philadelphia. She is referred for a scleral lens fitting due to neurotrophic keratopathy. Neurotrophic keratitis is a degenerative corneal disease caused by an impairment of trigeminal corneal innervation. The result is a loss of corneal sensation or corneal anesthesia. Without the natural sensation of the corneal epithelium, the eye will not blink, causing dryness and recurrent infection. As it progresses the disease may lead to corneal ulcers, scarring, melting and perforation. (Bonini, 2003)

Dr B is aware of the Boston Foundation for Sight and their groundbreaking research and has referred several patients with similar conditions to the Foundation with good results. (bostonsight.org, 2011) He believes that scleral lenses are the standard of care for treatment of this condition and several others. Due to the fact that this baby’s mom has limited resources and five other children, the doctor asked if we could attempt a scleral lens fit here in our office. According to the doctor, the goal of contact lens fit will be to protect the cornea from further damage due to the disease. We agreed and began planning for the baby’s visit.

Objective

Mom had been instilling preservative free tears and gel at ½ hour intervals to prevent corneal dryness. Due to the lack of sensation, the baby rarely blinks. Mom even has to manually close the lids together after instilling drops. The goal of the contact lens fit is to create a lasting moisture chamber and protection for the baby’s corneas and steady delivery of moisture to the eye. If the fit is successful, the baby will have an increased chance to maintain healthy corneas and mom will receive some relief from the drop regimen. It is not that mom minds the regimen, but with six children, the contact lens will make life a little easier for a busy mom!

Assessment

Vision in each eye is difficult to assess, but the baby appears to have light perception vision, more so in the right eye than the left. The right cornea has diffuse superficial staining and the left cornea has scarring due to previous corneal ulcers. The baby’s mom has been informed that the baby has limited auditory and visual potential due to her neurological problems. She is the sweetest little baby we have ever met and her mom would go to any lengths to care for her child. Her ability to handle the lenses even without ever having handled contact lenses in her life before this fit was amazing. Just to be safe, I had her put a lens on my eye before we started working with the baby; she was very gentle.

The actual diagnostic fitting of the contact lenses required some modifications to our normal routine.

Personal Note: At first glance it looked like the contact lens would be impossibly large for this tiny baby; I hesitated. I went into the contact lens diagnostic closet and chose a disposable soft contact lens (8.6 +2.00 14.2 diameter) and placed it on the baby’s eye. She tolerated the lens placement, blinked and smiled, and it did not look too large at all. I relaxed and was able to proceed.

We used the msd™ Mini Scleral Design lens from Blanchard Labs; the diagnostic set is a non-fenestrated, 15.8mm scleral design. We selected a lens based on fluorescein evaluation alone. This was accomplished using a portable slit lamp and trying to achieve a tear film under the lens equal to the thickness of the cornea (Figure 1).
(Note the insertion bubble, the lens was removed and re-inserted and it went away. We dispensed the lens with a small penlight so that the mom can check for those).

This was not a “one man job,” it required two technicians to manage holding the baby, and then again while the mom learned how to apply and remove the contact lenses (we had no shortage of volunteers). Everyone around wanted to be involved. We had mom practice applying and removing the lenses two times.

The lenses ordered were Boston XO2 with a Sag value of 5.0, Standard mid-periphery and edge lift, diameter of 15.8 and a power of +2.00 OU. Mom applied the lenses with Celluvisc™ (Figures 2 and 3) and the baby was remarkably cooperative. Although it was difficult to evaluate visual performance, the baby’s mom stated that the baby was looking at her. We all agreed that the baby could fix and follow light with the right eye when we dispensed the lens (Figures 4 and 5). Of course, the room was filled with technicians who couldn’t help but smile as they saw a promising outcome unfolding before their eyes.

**Plan**

Follow up will be with the patient’s ophthalmologist and the baby will return to us as needed.

Who would have thought to put a mini-scleral lens on a baby, a premature one at that? Before this sweet baby who stole my heart was presented to me as a patient, I hadn’t really thought about the idea. But that is what I love about what I do; I can make a difference in someone’s life, and in this case, the life of the entire family. When helping your contact lens patients, it is always important to “think outside of the box,” but when dealing with pediatric patients, you must not be afraid to utilize your entire toolbox of knowledge, creativity and lens designs!

---

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Choosing the Right Lens
As the contact lens professional, it is your responsibility to select the right contact lens modality for that individual patient and his everyday need (toddler, elderly or those between). For example, fitting an infant with a 14.5mm lens may not be the best choice if the fissure size is only 8–10mm, or the eight year old gymnast with a lens that does a flip flop out of the eye while balancing on a 4” beam. Today more than any time in the past, we have so many options available to us, that we should be able to choose the proper lens modality for any age, correction and visual need. Educational articles in this (and other) publications will provide you with excellent examples and success stories, to boost your confidence when a young child presents in your CL department.

Referrals, Revenue and the Reward
This column is dedicated to making the practice profitable, but the thought of generating a lot of revenue from a child who has a visual handicap just doesn’t feel right. Sometimes a huge smile and the knowledge that this child has a brighter future outweighs profit. This is a case where breaking even is worthwhile! However, keep in mind that children are a great referral source too, since they interact with teachers, neighbors, other parents who may be influenced to become your patient. It’s often said that “when you make one patient happy, they will send 5 new patients into your practice,” but when you make one child happy, it’s my guess that number can double. Your reward is a big smile, more patients and a better…BOTTOM LINE!

Woody is an experienced manager of contact lens practices, specializing in all phases of contact lens fitting and patient care. He is JCAHPO certified and has served on both the CLSA and NCLE Board of Directors. He is a contributing author to the CLSA Advanced Contact Lens Manual and was awarded the CLSA Member of the Year. Woody is a clinical consultant for SynergEyes Hybrid Lenses.

This article emphasizes the importance of understanding the needs of each patient regardless of age or visual needs. An excellent skill for clinical personnel is the ability to effectively help each patient get the best vision possible. Continuing education is a vital part of being able to achieve this goal.
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