Children's Eye FOUNDATION | The Foundation of **aapos**

Amblyopia 411

Amblyopia 411 is a public education program sponsored by the Children's Eye Foundation. The Goals of Amblyopia 411 are to offer correct and clinically researched information on amblyopia diagnosis and treatment, support and useful information related to treatment of amblyopia and provide a location for parents (and other caregivers) to share their successes and struggles with other parents for support and further education. To learn more and support us in our mission, please visit **www.childrenseyefoundation.org**.

WHAT IS AMBLYOPIA?

What is amblyopia?
Amblyopia or "lazy eye" is a common vision problem in children and is responsible for vision loss in more children than all other causes combined. Amblyopia is decreased vision of a child that results when one or both eyes send a blurry image to the brain. The brain does not learn to see clearly. Amblyopia may occur even when there is no observable structural abnormality of the eye. If amblyopia is not treated in a timely fashion the vision loss may be permanent into adulthood.

How is amblyopia detected?
A parent or primary care physician may notice either poor vision or strabismus.
Primary care physicians routinely screen for amblyopia. Amblyopia is sometimes detected on pre-school vision screening.

What are the types of amblyopia?
The types and causes of amblyopia are: Strabismic amblyopia, deprivation amblyopia, refractive amblyopia, or a combination of the three. All forms of amblyopia result in reduced vision in the effected eye (s).

What is strabismic amblyopia?
Strabismic amblyopia develops when the eyes are not aligned. When an eye turns in, out, up or down the brain may "turn off" the eye that is not aligned and the vision subsequently decreases.

What is deprivation amblyopia?
Deprivation amblyopia develops when a cataract or similar condition "deprives" a child's eye of visual input if not treated very early, vision loss may be severe and may affect both eyes.

What is refractive amblyopia?
Refractive amblyopia occurs when a child has a large or unequal amount of refractive error (need for glasses). Usually the brain "turns off" the eye that has the larger refractive error. Parents and primary care physicians may not notice a problem because the eyes are often aligned and the good eye vision is normal. Therefore, this kind of amblyopia may not be detected unless the vision is tested.

Will glasses help a child with refractive amblyopia see better?
Sometimes, but glasses alone may not correct the vision to 20/20. Glasses are prescribed initially and vision monitored until there is no further improvement. Any remaining amblyopia is then treated.

Can both eyes have amblyopia?
Yes. When there are equal amounts of high refractive error, both eyes may have poor vision (bilateral amblyopia) even when wearing glasses. Constant wear of glasses is very important and vision is checked frequently. Vision typically improves but may take several years.

When and how is amblyopia treated?
Amblyopia is treated during childhood and the earlier the age the better the treatment result. Usually, by the age of 9-10 years, the visual system is stable and the vision does not improve much with treatment. However, vision improvement can occur up to 17 years in some cases.

The underlying cause of the amblyopia is treated (correction of refractive error with glasses or contact lenses, removal of cataract, etc) and then vision reassessed. If vision is still reduced, consideration is given to amblyopia treatment. The main forms of treatment are patches and drops. Occlusion treatment involves patching the better seeing to stimulate vision in the poorer seeing eye. The ophthalmologist prescribes the hours per day to patch based on the age of the child and the severity of vision deficit. Follow up exams assess vision in the poorer seeing eye for improvement and in the better seeing eye to confirm no decrease in vision (occlusion amblyopia). In addition to an ophthalmologist an orthoptist may be involved in the assessment and management of amblyopia.

WHAT ARE THE GOALS OF TREATMENT?

What are appropriate goals of amblyopia treatment?
In all cases, the goal is the best possible vision in each eye. While not every child can be improved to 20/20, most can obtain a substantial improvement in vision. Realistic goals depend on the age of the child and the level of vision when the amblyopia is diagnosed. Your ophthalmologist can give you an estimate of vision potential.

How long does amblyopia treatment last?
Vision usually improves within a few weeks but optimal results may take several months and depends on the level of vision and age. Once vision has been maximized, maintenance treatment until 9-10 years of age may be required to keep the vision from regressing.

What happens if amblyopia treatment does not work?
In some cases, treatment for amblyopia may not succeed in substantially improving vision. It is a difficult decision to discontinue treatment, but sometimes that is best for both the child and family. Children who have significant amblyopia in one eye should utilize protective eyewear to protect the better seeing eye from injury. As long as the better seeing eye remains healthy, normal daily function is expected. There is no surgical treatment for amblyopia.

Excerpt from Economic Analysis of the Consequences of Failure to Prevent Childhood Blindness from Amblyopia *By William E. Gibson, Ph.D., Economist, September 27, 2007*

Amblyopia is a failure of visual developmental the level of the visual brain consequent from a number of causes, including misaligned eyes, refractive errors and other developmental abnormalities of the eye. It is generally unilateral. It is best treated when identified early. When identified too late, treatment is not effective.

Put simply, vision loss from amblyopia is treatable and consequent blindness is preventable.

Amblyopia has roughly the same infliction rates in children as diabetes has in the population as a whole…somewhere in the three to five percent range. And like diabetes, amblyopia is well worth treating early and widely in order to prevent mounting ongoing costs of living with the disease.

"I'm a super-patcher"!

To read this full paper go to www.childrenseyefoundation.org.

Photos courtesy of Lowery PHOTOGRAPHY

WHAT KIND OF PATCH SHOULD BE USED?

Orthoptists are allied health professionals that specialize in amblyopia and strabismus.

What kind of patch should be used?

The classic patch is an adhesive "Band-Aid" type which is applied directly to the skin around the eye. These are available in different sizes for younger and older children[1]. For children wearing glasses, a cloth patched slipped onto the glasses may be utilized[2].

"Pirate" patches on elastic bands are NOT recommended due to easy removal by children.

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Are any specific activities recommended while patching?

No. However, performance of near activities (reading, coloring, hand-held computer games) while patching may be more stimulating to the brain and produce a quicker recovery of vision. Watching a favorite TV program or use of a computer while patching sometimes encourages compliance.

We TYPICALLY do not recommend patching at school because it may cause problems at school such as difficulty learning, teasing by other children and reduced overall compliance.

The use of arm guards, which are gentle restraints, may help during the difficult phases of patching therapy.

What if a child refuses to wear the patch?

Many children resist wearing a patch at first. Successful patching requires persistence and much encouragement from family members, neighbors, teachers, etc. Children often throw a temper-tantrum, but eventually learn not to remove the patch. A reward to the child for successful patching can be helpful. Usually co-operation improves as the vision improves. You may try using a reward calendar to encourage cooperation.

The use of arm guards, which are gentle restraints, may help during the difficult phases of patching therapy[3]. These may be used not only as a deterrent from removing the patch but also as a teaching tool. The child will learn he/she doesn't have to wear the arm guards if the patch stays on!

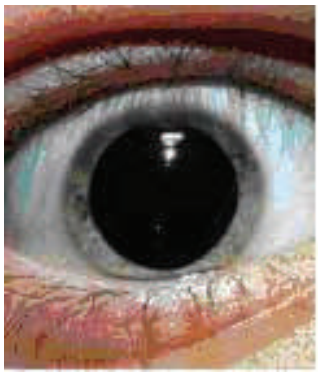
Is there an alternative to patching to treat amblyopia?

Sometimes the stronger eye can be "penalized" or the vision blurred to below the level of the poorer seeing eye. This can be done by using an eye drop (Atropine) in the better seeing eye and possibly changing the glasses prescription. Ophthalmologists sometimes use this treatment for mild and moderate degrees of amblyopia. Penalizing eye drops work less well when the good eye is nearsighted. Read more in the section "Questions and Answers about Atropine for Amblyopia Therapy".

Photos courtesy of Lowcay PHOTOGRAPHY

QUESTIONS AND ANSWERS ABOUT ATROPINE THERAPY FOR AMBLYOPIA

Atropine blurs close-up vision in the better-seeing eye. This encourages use of the eye with poor vision and improves vision in that eye over time. With atropine penalization, you will not have to fight constantly with your child to keep a patch over the better-seeing eye.



Example of a dilated pupil

Do the drops hurt? No. Unlike other types of eye drops, atropine drops usually do not sting.

How do I put them in? With your child lying down and looking up to the ceiling, hold the eye lids apart and place the drop anywhere between the lids. If the child is frightened, try giving the drop before he or she wakes up. In some children it is necessary for one adult to hold the child while the other gives the drop. Eventually a routine will be established, and it will get easy to put the drops in. Remember to **wash your hands before and after giving the eye drops.**

What are the side-effects? Rarely, a child can develop redness and swelling around the eye, or fever, or facial flushing. If this occurs, stop using the drops and contact us.

How do I store the drops? They may be kept at room temperature. Be sure to keep the atropine drops out of the reach of children.

I gave a drop of atropine five days ago, and my child's pupil is still dilated; is something wrong? No. A single drop of atropine may dilate the pupil for up to a week. Although the pupil remains dilated, the blurring effect of the atropine wears off in 1-3 days.

Should my child wear sunglasses, since the pupil is always dilated by the atropine? Outdoors on a sunny day, your child will be more comfortable wearing sunglasses. If your child already wears glasses, they can be coated with a clear ultraviolet filter, which will help.

How can my child function at school with the better eye blurred? The atropine blurs the good eye for near work. This forces the child to use the poorer eye for reading. Allow the child to hold reading material close. If the atropine seems to be interfering with school work, contact us.

How long will I need to use the atropine? Treatment may be continued for months or even years, depending on the age of the child and the severity of amblyopia.

My appointment is next week should I continue using the atropine drops? Discontinue the atropine drops one full week before your appointment (or before any surgery) unless your doctor says otherwise.

I put atropine drops in my child's eye, but now my own pupil is dilated. What happened? You forgot to wash your hands after giving the eye drops. Be careful not to get the atropine in your own eye-I you could have blurred vision and a dilated pupil for up to a week.

If you have any other questions about atropine treatment, please don't hesitate to call your doctor.

Prepared by David G. Hunter, MD, PhD

AMERICAN ACADEMY OF OPHTHALMOLOGY
The Eye M.D. Association

POLICY STATEMENT

Amblyopia is a Medical Condition

A Joint Statement of the American Association for Pediatric Ophthalmology and Strabismus and the American Academy of Ophthalmology

POLICY

Amblyopia is a medical condition which requires medical treatment. Amblyopia (ICD codes 368.0, 368.00, 368.01, 368.02, 368.03) is typically a preventable and treatable form of vision loss. Unless amblyopia is treated promptly during childhood, structural changes occur in the brain of the amblyopic child, resulting in decreased visual function.

Optical correction such as eyeglasses or contact lenses may be medically indicated as a part of amblyopia treatment in addition to other modalities, such as patching and/or pharmacologic treatment. Unless amblyopia is treated during childhood, vision loss is likely to be irreversible.

Approved by: American Association for Pediatric Ophthalmology and Strabismus
Board of Directors, March 2002
American Academy of Ophthalmology
Board of Trustees, April 2002

Revised and Approved by: American Association for Pediatric Ophthalmology and Strabismus
Board of Directors, November 11, 2006
American Academy of Ophthalmology
Board of Trustees, August 2006

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Photos courtesy of Lowery PHOTOGRAPHY

Amblyopia 411

YOUR CHILD'S PATCHING REQUIREMENTS

Patient Name _____

Date _____

Patching schedule

Doctor will circle

Patch the RIGHT / LEFT eye (patching the best-seeing eye)

Alternate between left and right eye

Two (2), Four (4), Six (6) HOURS ***every day***

Seven days a week

Five days a week

Weekends only

All waking hours

Type of patch recommended

Doctor will circle

Sticky

Cloth

Either option okay

Important Reminders

- Patch must cover entire eye without peeking.
- If glasses are required child must be looking through their glasses while patched.
- Pirate patches typically are NOT recommend.

Atropine Drops Schedule

Doctor will circle

Every Monday, Wednesday, Friday

Or Tuesday, Thursday, Saturday

Or Weekends

Directions for using atropine eye drops

Use 1 drop of 1% atropine in the right / left eye three times a week.

Please do not skip doses because the pupil looks dilated

- Adhesive patches can be found at your local pharmacy and online at some of these websites. www.ortopadusa.com, www.fresnelprims.com, www.**3m**.com/Nexcare.
- Cloth or felt patches may be used over eye glasses sometimes. Cloth patches can be found online. www.patchpals.com, www.framehuggers.com, www.fresnelprims.com, www.ortopadusa.com, www.perfecteyepatch.com.
- The use of arm guards, which are gentle restraints, may help during the difficult phases of patching therapy. Check out these sites. www.snugglewraps.com and www.pedi-wrap.com .

Note: If you have an idea to share regarding amblyopia treatment please email a.kuclo@childrenseyefoundation.org.

It's time to get started with your very own patching calendar! Marking your calendar with the days you patched will be a great reward and help you to know exactly when you patched. You *(of course mom, dad, grandma, grandpa, auntie or big sister/brother will help you)* may even want to note if what worked well—like a video game or reading a book and what didn't work so well. Stickers, markers, crayons and other ways to decorate your calendar will help keep you motivated! Creating a reward at the end of the month and posting a picture of it somewhere visible may also work as a reminder about what you are working toward! The biggest reward and the most important goal is **THE BEST POSSIBLE VISION** of course!

MY PATCHING CALENDAR MONTH _____YEAR _____

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY