

Esotropia

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What is Esotropia?

It is a **misalignment**. The eyes aren't working together as a **team**, like they should, either **one** or **both** eyes are **turned in** towards the child's nose. Other terms used for this condition are either **squint** or **strabismus**.

When the eyes actually cross, only one eye **can focus** on an object that the child is looking at. This is due to the fact that only one eye **lines up correctly** at the moment that the child focuses on an object. This forces a child to **use only one** of their eyes **at a time** for vision. This can have **negative long-term implications** for their vision.

The causes of Esotropia

There are 3 large groups that **cover** the causes of this condition:

1 Primary Esotropia

By far the most common. It can also be subdivided into **accommodative** and **non-accommodative**.

Accommodative Esotropia

It is caused by significant farsightedness (hypermetropia/hyperopia). The degree to which the eye or eyes **cross-over**, varies, based on how much work the child needs to put into focusing on an object. In many cases, the degree of farsightedness is equal in both eyes, although in other cases one eye may be more farsighted (hyperopic) than the other.

To give you a better understanding of what happens to a person with esotropia, let us look at someone without esotropia. When a person focuses from a distant to a near object, they increase the power of the lenses in their eyes, giving them the ability to see an object clearly. This is called accommodation. A natural reflex of convergence. For someone with esotropia though, their eyes turn inwards towards the nose during this response, so as to stay "on target".

Thus, accommodative esotropia occurs because the farsighted child has to over-focus to see clearly. So, when eyes over focus, the natural reflex is for the eyes to cross. It is like when you try to see the tip of your nose. You have to exert "extra" focus and consequently your eyes cross. Since more focusing is required when trying to see close objects, the crossing tends to be greater when looking at an object close-by.

Children with this type of esotropia are tested to see which glasses prescription is needed to correct the farsightedness. If the crossing "disappears" or is fully corrected with glasses, the strabismus is said to be a "fully" accommodative esotropia. If it only improves, but does not "disappear" altogether, it is called a "partially" accommodative esotropia.

Did you know?

Did you know that glasses are frequently used to treat squints?

Non-accommodative Esotropia

Here, the squint is **not dependent** on the child's ability to over focus. This means that the severity or angle of the squint does not change when the correct glasses prescription is given to the child.

There are 3 forms of non-accommodative esotropia, namely:

- **Constant non-accommodative esotropia:** The angle of the squint remains the same regardless of how far an object is from the eyes. It is also known as infantile or congenital esotropia and usually starts within the first 6 months of life.
- This one's squint depends on the distance an object is from the child, **near esotropia** (non-accommodative convergence excess) or **distance esotropia** (non-accommodative divergence insufficiency).
- **Cyclic esotropia:** Here the squint varies with time

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Secondary Esotropia

This one is unrelated to the refractive error in the eyes but is due to the pathology in the eye itself. For example, something like a cataract or perhaps due to some disease elsewhere in the body, such as the brain. It can also be the result of some type of trauma.

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Post-exotropia Surgery

In such a case, the child has just undergone surgery for a squint where they eye, or eyes turn outward, away from the nose (called exotropia). In such a situation, over-correction of the squint occurred, changing their condition from exotropia to esotropia.

Who is affected?

More than half of strabismus cases in children fall under esotropia, making it the most common type of squint. The incidence is about 1% over 10 years for patients under 19 years of age. The average presenting age of accommodative esotropia is 2.5 years, although there is a wide range from 3 months to 7 years, depending on the type of esotropia.



What are the risk factors?

- Premature birth
- Maternal smoking during pregnancy
- Refractive errors, such as farsightedness

How do I know whether my child has the condition or not?

The first thing you could notice are the eyes or one eye turning inwards towards the nose. If both eyes are affected, initially the child will alternate between using one eye to focus for a period of time, before swapping over to the other eye.

Interestingly to note, according to studies, children with misaligned eyes show a higher degree of somatic complaints, depression and anxiety than children who do not suffer from this condition. Somatic complaints include:

- Fatigue
- Aches
- Nausea
- Vomiting
- Headaches
- Dizziness

Did you know?

If a squint is not diagnosed and treated promptly, there is a 40 to 72% risk of developing a condition called amblyopia. This means that the brain “switches off” one of the eyes and if not treated, the eye can become permanently blind.

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What can I do if my child does have esotropia?

The most important step is to have your child assessed by an eye specialist as soon as possible.

Delaying treatment, can be detrimental

A child can have an alternating strabismus, where they will occasionally use their right eye while the left eye is turned inwards. Then they swap to use their left eye with the right eye turned inwards. However, many children can quickly favour one eye over the other.

As the eyes are not looking in the same direction, they send different images to the brain about what the child is seeing. This is very confusing. If the child favours one eye over the other, this eye becomes the eye that looks at the object and will be "chosen" by the brain. To stop the conflicting information, the brain will eventually "switch off" or suppress the information from the inwardly turned eye. This is called amblyopia.

If not addressed promptly, the suppressed eye will be permanently "switched off" resulting in vision loss.

Amblyopia results in another problem! In order for the child to develop 3-dimensional vision (binocular fusion or stereoscopic vision), the brain needs clear, almost identical images from both eyes. If the brain suppresses information from an eye for too long, the child may never be able to develop 3D vision. This can have a detrimental effect on the child's safety and future career options.

How is it diagnosed?

A thorough examination will be done by your eye specialist. Here they can determine the type of esotropia and its severity. They can also establish the cause and whether or not it is linked to a medical condition.

3 Pieces of information is established:

- Determine if the vision in each eye is normal, by assessing the visual behaviour of the preverbal child or simply have the verbal child read the eye chart.
- Secondly, the amount or degree of crossing, by measuring using prisms while the child is viewing an object.
- Thirdly the need for glasses, by using eye drops to dilate the pupil and relax the child's ability to focus. These drops take approximately 20 to 30 minutes to work and will blur the vision for about 1 or 3 hours or longer. After the eyes have been dilated, the eyeglass prescription is calculated using a special light (retinoscope) along with lenses.

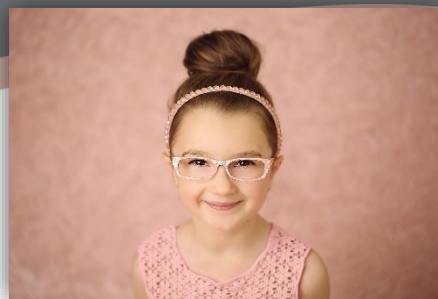
Determining the proper lens power in young children is difficult and may require repeat exams and changes in the eyeglass lenses. By using this method, an accurate measurement can be calculated without the baby or child's input.

Did you know?

Esotropia is a form of squint where one or both eyes turn in towards the nose.



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How is it treated?

The goals of treatment are to:

- Aid in the development of normal vision in each eye
- To make the eyes as straight as possible
- To give the best possible degree of binocular or 3D vision

Treating Amblyopia	Treating the Squint	Glasses	Surgery
<p>About 20 to 40% of patients with esotropia will also have amblyopia in the “weaker” eye. The aim of the treatment is to encourage the weaker eye to start stimulating the brain again, which results in improved vision in that eye over time. The most effective way to do this is to “limit” the vision in the better eye for a specified number of weeks or months, as determined by the specialist. The main goal is not to straighten the eyes but to restore vision. Patching is one of the methods to do this. An adhesive patch covers the eye with the better vision. This occludes the “stronger” eye forcing the brain to recognise the “weaker” eye again. A blurring lens can be placed over the “good” eye or drops can be administered that blur vision in the “good” eye. The first option is usually the most practical treatment, but its success depends on the compliance of both parents and child. If the amblyopia is treated successfully the child will no longer favour the “stronger” or dominant eye but will happily alternate gaze from one eye to the other.</p>	<p>This is done via two methods; glasses and or surgery and the aim is to get the eyes as straight as possible as soon as possible.</p>	<p>Children, even very young children, adjust quite well to glasses. The glasses not only straighten the eyes, but also relax the child’s ability to over-focus. This helps alleviate symptoms associated with eyestrain. For patients with accommodative esotropia, glasses must be worn full-time. Older children over 4 to 5 years, may have blurred distance vision when they first put on their glasses. This is because they have a strong habit of over-focusing and continue to do so even when wearing glasses. Over several days, most children will relax their eyes and adjust well. The eyes usually straighten within a few days to a few weeks. If the eyes are still crossing and not working together as a team after this period, eye muscle surgery is usually required. Those whose squint is fully corrected, don’t tend to develop amblyopia and have an excellent chance of stereopsis. If the squint’s angle is partially corrected, the child will require surgery in addition to wearing glasses. With near esotropia, glasses will straighten the eyes for distant objects, but the eyes will still cross for near objects. Bifocal glasses can help. This is a small powerful lens placed in the lower part of the child’s glasses. This lens further relaxes “extra” focusing to straighten the eyes for near objects. Chin-up posturing indicates that the child is looking through the lower bifocal lens for near work, therefore using them correctly.</p>	<p>This is required if the eyes are not straightened using conservative measure like patching or wearing glasses. The eye specialist will take very specific and accurate measurements during the various consultations to ensure that the surgery they perform is matched to the child’s condition perfectly. There are 6 eye muscles that are responsible for moving each eye. Surgery for esotropia involves detaching one or more of these muscles from the eyeball and then reattaching them to a new location on the eye so that the muscles will work in the right way to help the eye to see straight. When both eyes are affected, both eyes require surgery.</p>

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Follow up

Patching, the use of glasses and or surgery require meticulous follow-up consultations. As the child grows and responds to the treatments, the specialist needs to adapt the treatment to the changing conditions. It is important for parents to realise that their children will need to wear glasses for as long as they are required to maintain good vision, alignment of their eyes and high-grade stereopsis.

In most cases, this means they will need to continue treatment at least into their adolescence or early adulthood.

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