Fact Sheet

STRABISMUS

What is Strabismus? Strabismus is a vision condition in which a person cannot align both eyes simultaneously under normal conditions. Strabismus is caused by a lack of coordination between the eyes. As a result, the eyes look in different directions and do not focus at the same time on a single point. One or both of the eyes may turn in, out, up or down. When one or both eyes turn in (cross), the condition is called esotropia. When one or both eyes turn out, the condition is called exotropia. Hypertropia occurs when an eye(s) is turned upward and hypotropia describes the condition of one or both eyes turned downward.

An eye turn may be constant (when the eye turns all of the time) or intermittent (turning only some of the time, such as, under stressful conditions, with visual fatigue, or when ill). Intermittent strabismus is a normal developmental milestone up until six months of age. After this time period, any evidence of continued eye misalignment should be evaluated clinically. A good rule of thumb is to always talk to a medical practitioner when a child is observed to have poor eye alignment. Whether constant or intermittent, strabismus always requires appropriate evaluation and treatment. Children do not outgrow strabismus.

What is the Prevalence of Strabismus with Children? Strabismus affects five percent of people in the United States or more than 12 million individuals, most of them children. Infantile esotropia (the eye turns inward) affects about one percent of full term, healthy babies and a higher percentage of babies born prematurely or born with a disability condition. Strabismus occurs equally in girls and boys and shows no variation in racial or ethnic distribution. Most strabismus develops in young children, although there are some diseases that may cause it to develop in adults.

What are the Causes and Risk Factors for Strabismus? Most strabismus is the result of an abnormality of the neuromuscular (including brain) system’s control of eye movement. Six different muscles surround each eye and work "as a team" with the brain, so that both eyes can focus on the same object. Strabismus can be described by its cause. The 3 cranial nerves (III, IV, VI) are responsible for eye movement and can be weak or palsied and cause strabismus. Some examples of paralytic strabismus include third nerve palsy and superior oblique palsy. Strabismus is often present at or appears shortly after birth (congenital strabismus). When a young child’s eyes fail to focus on the same image, the brain may learn to ignore the input from one of the eyes to avoid double vision. If the problem is not treated, the eye that the brain ignores is likely to never see well.

This loss of vision is called amblyopia and it is often associated with strabismus.
Other conditions associated with strabismus in children may include: (a) many syndromes including Apert, Down, Prader-Willi, or Noonan syndrome; (b) cerebral palsy; (c) congenital rubella; (d) a hemangioma near the eye during infancy; (e) incontinentia pigmenti syndrome; (f) hydrocephalus; (g) retinopathy of prematurity; (h) retinoblastoma; (i) traumatic brain injury; and (j) Trisomy 18 where a child has 3 copies of chromosome 18, instead of the normal 2 copies. A family history of strabismus may be a risk factor.

Farsightedness may be a contributing factor. If a child is significantly farsighted (hyperopia), an inward turn of the eye may occur when focusing to look further away, such as when looking at a television. If the amount of turn is greater at near than far, the eye doctor may prescribe a multifocal lens. For children, the doctor may prescribe a traditional bifocal with a line or a form of no-line bifocal or progressive lens.

Strabismus that develops in adults can be caused by: (a) botulism; (b) diabetes (causes a condition known as acquired paralytic strabismus); (c) Guillain-Barre syndrome; (d) injuries to the eye; (e) shellfish poisoning; (f) stroke; (g) traumatic brain injury; and (h) vision loss from any eye disease or injury. Stroke is the leading cause of strabismus in the adult population. No matter the age of the individual, any other disease causing vision loss may cause strabismus. This is a key consideration for children who have a pediatric visual impairment as they may also have strabismus.

**What are the Visual Implications of Strabismus?** Children with strabismus may initially have double vision. This occurs because of the misalignment of the two eyes in relation to one another. In an attempt to avoid double vision, the brain will eventually disregard the image of one eye (called suppression).

**What are the Needed Tests and Diagnostics to Confirm Strabismus?** A physical examination will include a detailed examination of the eyes by an eye care specialist. The eye doctor can help to rule out false strabismus. False strabismus (pseudostrabismus) occurs when a child appears to have a turned eye; however, this appearance may actually be due to other factors such as (a) extra skin that covers the inner corner of the eye, (b) a broad, flat nose, and/or (c) eyes set unusually close together or far apart. False strabismus usually disappears as the child’s face grows.

**What are Treatments for Strabismus?** The goal of strabismus treatment is to improve eye alignment that allows for the eyes to better work together (binocular vision). Treatment may involve strategies to strengthen the weakened muscles and realign the eyes. Glasses and eye muscle exercises may be prescribed. Eye muscle surgery may also be recommended. Treatment options should be discussed with an eye care specialist.

**References and Resources**

American Association for Pediatric Ophthalmology and Strabismus - [http://www.aapos.org/](http://www.aapos.org/)

**For more information about the CO Services for Children and Youth with Combined Vision and Hearing Loss Project contact:**
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Fact Sheets from the Colorado Services to Children and Youth with Combined Vision and Hearing Loss Project are to be used by both families and professionals serving individuals with vision and hearing loss. The information applies to children, birth through 21 years of age. The purpose of the Fact Sheet is to give general information on a specific topic. The contents of this Fact Sheet were developed under a grant from the United States Department of Education (US DOE) #H326C080044. However, these contents do not necessarily represent the policy of the US DOE and you should not assume endorsement by the Federal Government. More specific information for an individual student can be provided through personalized technical assistance available from the project. For more information call (303) 866-6681 or (303) 866-6605. Updated: 4/12