



NASET Q & A Corner

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Amblyopia

The brain and the eyes work together to produce vision. The eye focuses light on the back part of the eye known as the retina. Cells of the retina then trigger nerve signals that travel along the optic nerves to the brain. Amblyopia is the medical term used when the vision of one eye is reduced because it fails to work properly with the brain. The eye itself looks normal, but for various reasons the brain favors the other eye. This condition is also sometimes called lazy eye. Amblyopia is the most common cause of visual impairment among children, affecting approximately 2 to 3 out of every 100 children. Unless it is successfully treated in early childhood, amblyopia usually persists into adulthood. It is also the most common cause of monocular (one eye) visual impairment among young and middle-aged adults. This issue of *NASET's Q & A Corner* comes from the National Eye Institute (NEI) and will focus on questions pertaining to amblyopia.

Amblyopia Defined

What is amblyopia?

Amblyopia is the medical term used when the vision of one eye is reduced because it fails to work properly with the brain. The eye itself looks normal, but for various reasons the brain favors the other eye. This condition is also sometimes called lazy eye.

How common is amblyopia?

Amblyopia is the most common cause of visual impairment among children, affecting approximately 2 to 3 out of every 100 children. Unless it is successfully treated in early childhood, amblyopia usually persists into adulthood. It is also the most common cause of monocular (one eye) visual impairment among young and middle-aged adults.

Cause

What causes amblyopia?

Amblyopia can result from any condition that prevents the eye from focusing clearly. Amblyopia can be caused by the misalignment of the two eyes—a condition called strabismus. With strabismus, the eyes can cross in (esotropia) or turn out (exotropia). Occasionally, amblyopia is caused by a clouding of the front part of the eye, a condition called cataract.

A common cause of amblyopia is the inability of one eye to focus as well as the other one. Amblyopia can occur when one eye is more nearsighted, more farsighted, or has more astigmatism. These terms refer to the ability of the eye to focus light on the retina. Farsightedness, or hyperopia, occurs when the distance from the front to the back of the eye is too short. Eyes that are farsighted tend to focus better at a distance but have more difficulty focusing on near objects.

Nearsightedness, or myopia, occurs when the eye is too long from front to back. Eyes with nearsightedness tend to focus better on near objects. Eyes with astigmatism have difficulty focusing on far and near objects because of their irregular shape.

Treatment

How is amblyopia treated in children?

Treating amblyopia involves forcing the child to use the eye with weaker vision. There are two common ways to treat amblyopia:

Patching

An adhesive patch is worn over the stronger eye for weeks to months. This therapy forces the child to use the eye with amblyopia. Patching stimulates vision in the weaker eye and helps parts of the brain involved in vision develop more completely.

An [NEI-funded study](#) showed that patching the unaffected eye of children with moderate amblyopia for two hours daily works as well as patching for six hours daily. Shorter patching time can lead to better compliance with treatment and improved quality of life for children with amblyopia. However, a recent [study](#) showed that children whose amblyopia persists despite two hours of daily patching may improve if daily patching is extended to 6 hours.

Previously, eye care professionals thought that treating amblyopia would be of little benefit to older children. However, results from a [nationwide clinical trial](#) showed that many children from ages seven to 17 years old benefited from treatment for amblyopia. This study shows that age alone should not be used as a factor to decide whether or not to treat a child for amblyopia.

Atropine

A drop of a drug called atropine is placed in the stronger eye to temporarily blur vision so that the child will use the eye with amblyopia, especially when focusing on near objects. [NEI-supported research](#) has shown that atropine eye drops, when placed in the unaffected eye once a day, work as well as eye patching. Atropine eye drops are sometimes easier for parents and children to use.

Can amblyopia be treated in adults?

Studies are very limited at this time, and scientists don't know the success rate for treating amblyopia in adults. During the first seven to ten years of life, the visual system develops rapidly. Important connections between the eye and the brain are created during this period of growth and development. Scientists are exploring whether treatment for amblyopia in adults can improve vision.