

# Strabismus

## **WHAT IS STRABISMUS?**

Strabismus is a visual defect that results when the eyes do not properly align with each other. One eye may look straight ahead, but the other may turn in (“crossed eyes”), out (“wall eyes”), upwards, or downward. Strabismus usually develops during childhood, but can occur at any age. The misalignment of the eye may be constant or may come and go, but does not often resolve without medical intervention.

Left untreated, strabismus can result in serious vision problems. Normally both eyes focus on the same spot, and the brain processes these similar pictures into a single, three-dimensional image. Because the eyes of a patient suffering from strabismus look in different directions, the brain receives different images from each eye. As a result, the brain tries to compensate for this “double vision” by suppressing the input from one eye, impairing depth perception. Over time, the brain may “forget” how to interpret signals from the eye it is ignoring, eventually leading to vision loss or functional blindness in the affected eye, a condition called amblyopia (decreased vision). Strabismus is often accompanied by blurred vision, headaches, eye strain, and fatigue.

## **WHAT CAUSES STRABISMUS?**

Strabismus is caused by weakness or other problems with one or more of the six extraocular muscles surrounding each eye that coordinate eye movement and position the eyes to focus in the same direction. Strabismus in childhood may be a congenital defect or may develop as a result of other conditions that interfere with eye coordination, including cerebral palsy and Down’s syndrome. Strabismus acquired in adolescence or adulthood can be caused by a disease (i.e., diabetes), neurologic disorders (i.e., brain tumour), or traumatic head injury.

## **HOW IS STRABISMUS TREATED?**

Patients with strabismus are generally referred to an ophthalmologist for treatment, which focuses on strengthening the eye muscles to improve alignment and achieve normal vision in both eyes. Glasses and eye exercises may be prescribed. When amblyopia is present (as is often the case in children with strabismus), the “good” eye may be covered with a patch forcing the child to use and train the amblyopic eye.

If strengthening techniques are unsuccessful, surgery to reposition the extraocular muscles may be considered. Alternatively, BOTOX<sup>®</sup> (botulinum toxin type A) therapy may also be used.

BOTOX<sup>®</sup> was approved by Health Canada for the treatment of strabismus in patients 12 years of age and older in 1990 and may provide a minimally invasive alternative to surgery for selected patients.<sup>1</sup> BOTOX<sup>®</sup> therapy involves the injection of therapeutic doses of purified botulinum toxin protein directly into the muscles surrounding the eye. It is ineffective in chronic paralytic strabismus except to reduce antagonistic contracture in conjunction with surgical repair. Derived from the bacterium *Clostridium botulinum*, BOTOX<sup>®</sup> therapy inhibits the release of a neurotransmitter, acetylcholine, from nerve cells, blocking the signals that promote involuntary muscle contractions. The effect is temporary and the treatment needs to be re-administered approximately every one to three months, depending on the individual patient. Patients should speak to a physician to fully understand their treatment options.

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**REFERENCES:**

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<sup>1</sup> BOTOX<sup>®</sup> Canadian Product Monograph. Allergan Canada. 2008.